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BY CHARLES BOLTON, C.B.E., M.D., D.SC. LOND., F.R.C.P. LOND., F.R.S.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

LECTURE II.

(Delivered on June 7th.)

ANALYSIS OF CASES OF PAIN.

(Continued from p. 1168.)

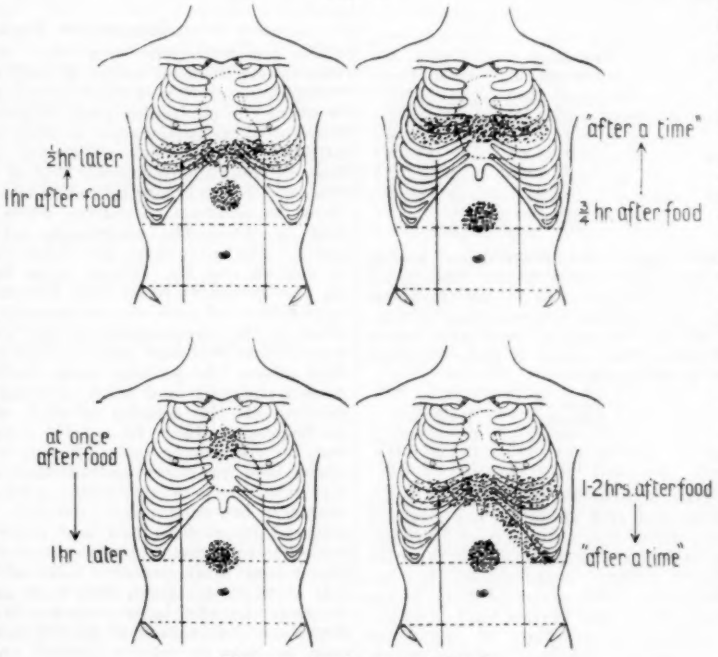
I HAVE already dealt with 715 cases of my series, who suffered from pain in isolated areas, and divided them into three groups, pyloric, cardiac, and œsophageal according to the position of the pain and its time of onset after food.

The remaining 294 cases of the series show multiple areas of pain, 261 of whom complained of pain in all possible combinations of the local areas already considered. The remaining 33 cases cannot be shortly classified but three types may be mentioned. Diffuse pain affected the ribs at both sides of the chest or more commonly the left only, and, speaking generally, the sixth rib separates this region into two parts, an inframammary in which chiefly early and irregular pain occurs, and the ribs below in which the pain is more likely to be late in appearance. The pain may take the form of a longitudinal line passing through the nipple and the ninth costal cartilage. Pain occurred in the sternum and along one or both costal margins and might also affect the central line. It would take too long to give all the figures relating to the analysis of these cases, so that the brief statement must suffice, that a comparison of their time relations as to the taking of food with those already described leaves no doubt whatever that the same interpretation may be given to the position of the pain and its time of onset whether single or multiple areas are concerned. When *all parts of the gastric apparatus are simultaneously affected* it is very difficult to say whether the disorders are independent of or related to each other in any way. There are, however, two circumstances which are worthy of notice.

1. The pain is usually described as *commencing at the same time* in each position. When the pains commence at the same period of digestion they show the characteristics of pyloric, or cardiac, or œsophageal pain just the same as in the case of the single areas, and it is therefore only reasonable to suppose that the same interpretation may be given to them. In 89 cases in which œsophageal pain was combined with that due to the pylorus or body, 50 per cent. of combined œsophageal and pyloric cases complained of late pain, and we must therefore assume that in these cases the œsophagus is affected by a backward effect from the pylorus, because primary œsophageal pain should occur early. A certain number of examples of cardiac pain occur late and œsophageal pain when combined with these also occurs late. So that it appears that either the pylorus or the body produce backward effects upon the œsophagus. On the other hand, when the pain occurs early or irregularly it indicates excessive irritability of the stomach either as an advanced pyloric manifestation or as a primary nervous irritability affecting all parts simultaneously.

2. The pain may be described as spreading *upwards* or *downwards* during digestion. Forty cases of this kind have been analysed. The spread upwards seems to show that the disorder may begin in the pylorus and secondarily affect the body of the stomach and the œsophagus by a backward effect; or in the body and secondarily affect the œsophagus. The pain may spread from any part, and the interval between the two pains varies from half an hour or so up to two or three hours, but most often the statements made are "after a time" or "later on"—for example, local pain in the upper sterno-umbilical region one hour after food followed in half an hour by a band of pain across the lower sternum, and so on. The pain may be described as spreading downwards in from a few seconds to half to one hour. It may spread from the sternum to the abdomen or down the costal margins (Fig. 1). Each mechanism is upset in turn, a general irritability of the stomach or œsophagus being present—for example, in the lower sternum half an hour after food, followed in half an hour by pain in the middle sterno-umbilical area. A rapid spread from above down denotes considerable nervous irritability, as, for example, in a neurotic patient who complained of a sore feeling in the whole of the sternum at once after food, followed by pain in the middle sterno-umbilical region which passed down on each side of the umbilicus, and ended in general colic and diarrhœa. The cases of combined pain, therefore, appear to indicate that a primary affection of the pylorus commonly produces backward effects through the body of the stomach upon the œsophagus, and similarly a primary cardiac affection produces effects upon the œsophagus. Also that all the parts may be affected together early or

FIG. 1.



Diagrams showing spread of pain.

irregularly or successively as they are brought into action owing to a general nervous irritability.

If this is the case the probability is that the same kind of process is really going on in the cases with isolated areas of pain, the irritability of the other parts not being sufficiently pronounced to cause actual pain. A study of the sensation of fullness or distension favours this hypothesis.

Sensation of Fullness.

The sensation of fullness is important, because it signifies a disorder of the body of the stomach, but it is not so valuable as referred pain in this respect, since it may be voluntarily produced by air-swallowing. This effect must, however, not be over exaggerated, because it chiefly occurs to any degree in the neurotic subject and is only seen in a certain number of such patients. It is certainly not of sufficient frequency to materially diminish the value of fullness as a symptom. Another disadvantage is the difficulty of clearly distinguishing this symptom from general abdominal fullness. In a series of 664 cases of pain, 523 complained of fullness. Of the 664 cases, 473 were instances of pain in a localised position, of which 363 showed the symptom of fullness in addition; and 191 of pain in combined areas of which 160 exhibited fullness. The cases of localised pain alone concern us at present. They are as shown in Table I.

TABLE I.

Region.	Cases of fullness.	In a total of—
Upper sternal	22	44 (50%)
Lower „	37	66 (56%)
Upper st.-umbil.	125	143 (87·4%)
Middle „	86	104 (82·7%)
Lower „	40	48 (83·3%)
Right 9 c.c.	25	31 (80·6%)
Left 9 c.c.	19	25 (76%)
Right and left 9 c.c.	9	12 (75%)
	363	473

The fact that the upper sterno-umbilical region shows fullness in 87·4 per cent., whilst the lower sternal only shows it in 56 per cent., is an argument in favour of these two regions representing respectively the body of the stomach and the lower œsophagus. Combining these areas of pain together the following result is obtained:—

Region.	Cases of fullness.	In a total of—
Œsophagus	59	110 (53·6%)
Cardiac end	125	143 (87·4%)
Pyloric „	179	220 (81·3)%

Thus it appears that almost 90 per cent. of cases of pain in the cardiac end and about 80 per cent. of cases of pyloric pain show the sensation of fullness. Allowing for exaggeration and inaccuracy, it is quite clear that very many pyloric cases show also an affection of the body, the indication of this being not pain but fullness. It is well known that in place of fullness pyloric cases may complain of emptiness and hunger. This is easily explained because when the pylorus is irritable it holds up the gastric contents, but the actual sensation produced depends upon the volume of contents remaining in the stomach. When the pylorus shows its irritability late or the stomach empties initially quickly and only a very little remains in the stomach, the feeling produced by the body is an empty feeling similar to that due to hunger. Thus the body of the stomach is usually affected when the pylorus is irritable, but produces two opposite feelings—a pain associated with fullness if a fair amount of material is present, or a pain associated with hunger sensations if very little remains in the stomach—in other words, a hunger pain. The œsophagus is associated with fullness in about half the cases, showing that the body of the stomach is also affected and the cause of the œsophageal symptoms.

It is also certain that many of such cases who feel symptoms late during digestion are secondary to pyloric irritability, for, as we shall see presently, they are liable to show acid regurgitation late during digestion, which is a pyloric symptom. Now it must be quite clearly understood that absence of pyloric relaxation, although it produces fullness or pain in the body and sour eructations with œsophageal symptoms, is not a cause of pyloric pain. It is only when the pylorus and adjacent part of the vestibule become spasmodic that pain results.

The following clinical types of pyloric irritability may therefore be recognised. (1) Pyloric pain with hunger sensations—hunger pain. (2) Pyloric pain with a sensation of fullness, with or without cardiac pain. (3) Fullness or pain in the body of the stomach, without pyloric pain occurring at all. Acid eructations and œsophageal symptoms may result in all three cases. In the first, when hypersecretion is present, and in the second and third from regurgitation of the acid contents of the stomach. The third condition can only be diagnosed if a fractional test-meal shows failure in the neutralisation process and acid eructations occur late during digestion.

There can be no doubt that the most important type of dyspepsia is this pyloric type, due to pyloric irritability and its backward effects upon the cardiac end of the stomach and the œsophagus. A second type appears to affect the body of the stomach primarily with secondary effects upon the œsophagus. A third type affects the œsophagus only.

RELIEF OF PAIN.

So far we have seen that these symptoms of functional disorder occur at different phases in the functional activity of the stomach and cease when the work of the particular part affected is finished. The time of their appearance is that at which the part affected displays its maximum activity, and the time of their disappearance that at which this activity ceases. There is no pain when the stomach is empty. Now, in addition to ceasing when the stomach is at rest or when the maximum activity of the part involved is over, there are other ways in which pain is put an end to. These must now be considered, as the recognition of the factors causing the disappearance of pain are as important as that of those causing its appearance in the explanation of the mechanical disorder which gives rise to it. In the first place, the patient soon realises that his food causes the pain and tries to reduce the stimulus by cutting off the articles of diet, which he considers to be responsible. In a mild case he may succeed, but he commonly cuts off the wrong food or, by abstinence, produces malnutrition of the whole body, including the nervous system, with the result that his stomach becomes more irritable, and can only be relieved by rest in bed and a graduated diet with remedies to improve the nervous system. Secondly, the patient may perceive that when the stomach is full there is no pain, but that as it empties pain develops in the later stages; in other words, he discovers that eating stops his pain. When he has pain he eats to relieve himself and selects his diet according to what he finds relieves him best and for the longest time. It is quite plain that in this case the patient is bringing into play some automatic mechanism which counteracts the disorder causing the pain. Thirdly, relieving the stomach partially or completely of its contents temporarily or permanently puts an end to the pain. I refer to the two common motor disturbances which of themselves constitute symptoms of dyspepsia—namely, eructation and vomiting—both of which acts are also employed by the patient to relieve his symptoms. We have, therefore, to consider the questions of the relief of pain by food, and by eructation and by vomiting.

Relief by Food.

It has been a matter of common knowledge, probably from the earliest times, that the pain of dyspepsia is very frequently relieved by food. It may be completely relieved for a definite time or only partially relieved; it may disappear temporarily during the eating of the meal to return again shortly, or it may

be relieved on some occasions and not on others. It seems, therefore, that this common occurrence of the relief of pain is quite as definite a link in the chain of events as that of pain itself.

In this series there are 324 cases of isolated pain, of whom 190 were completely relieved of pain by food, 24 partially, 27 temporarily, and 65 unrelieved; 18 cases were sometimes relieved and sometimes not. The distribution of the 190 cases of *complete relief by food* is given in Table II.

TABLE II.

Region.	Cases.	With complete relief by food in—
Upper sternal	31	8 (25·8%)
Lower sternal	49	22 (44·8%)
Upper st.-umbilical	105	53 (50·4%)
Middle st.-umbilical	91	67 (73·6%)
Lower st.-umbilical	48	40 (83·3%)
	324	190

The highest percentage of cases in which relief is obtained by food occurs in those showing pain in the pyloric region (middle and lower sterno-umbilical areas); about half the cases showing pain in the body of the stomach and the lower œsophagus (upper sterno-umbilical and lower sternal), which are similar as regards the onset of pain, are afforded relief by food; and only a quarter of those suffering from pain in the upper œsophagus are so relieved. So that one of the factors influencing the relief by food is the part of the apparatus involved and therefore the particular function which is upset. On analysing the cases as regards the time of onset of pain, the interesting fact is brought to light that, in all the regions involved, the cases in which pain comes on late during the digestive process are those which are chiefly relieved of their pain by food. The result is given in Table III.

TABLE III.—*Complete Relief of Pain by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper sternum ..	—	1	6	1	= 8
Lower sternum ..	—	2	17	3	= 22
Upper st.-umbilical	—	11	41	1	= 53
Middle ,,	—	—	65	2	= 67
Lower ,,	—	—	40	—	= 40
Total	—	14	169	7	190

We have already seen that late pain occurring in cases of cardiac and œsophageal irritation commonly indicates that the pyloric end of the stomach is the primary cause of such irritation; in this series the percentage of pyloric cases obtaining relief by food is much greater than that of either the cardiac

TABLE IV.—*Partial or Temporary Relief of Pain by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper sternum ..	4	—	1	2	= 7
Lower sternum ..	3	1	4	2	= 10
Upper st.-umbilical	2	3	9	3	= 17
Middle ,,	2	—	7	3	= 12
Lower ,,	—	—	5	—	= 5
Total	11	4	26	10	51

or œsophageal cases, so that it is probable that many of the latter cases, in which pain occurs late, obtained relief by food because they are secondary to the pyloric end of the stomach. When we consider a *partial or temporary relief of pain by food*, of which there are 51 cases, it appears that a greater relative proportion of cases with early pain are so relieved that when the relief is complete and especially those affecting the body of the stomach and the œsophagus. The analysis is given in Table IV.

A consideration of the 65 cases in whom the pain is *unrelieved by food* shows that they are chiefly the subjects of early and irregular pain. The analysis is shown in Table V.

TABLE V.—*Pain Unrelieved by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper sternum ..	12	—	—	2	= 14
Lower sternum ..	7	—	3	3	= 13
Upper st.-umbilical	10	2	3	11	= 26
Middle ,,	1	—	1	8	= 10
Lower ,,	—	—	—	2	= 2
Total	30	2	7	26	65

The *irregular type of pain* is relieved at some times and not at others, for out of 18 cases of this kind of relief 14 were examples of the irregular type of pain.

The following deductions may be made. Pain may be relieved by food whatever part of the apparatus is affected and at whatever time the pain occurs. Complete relief is much more likely to be afforded when the pain appears late, whatever part is affected, but of all parts pyloric pain and its secondary consequences on the body and œsophagus are the most likely to be relieved. Pain occurring early or irregularly after food is unlikely to be relieved by food, or if so the relief is mostly temporary or partial. This is, of course, seen more particularly in the œsophagus and body of the stomach. Late pain, which is unrelieved by food or only partially or temporarily, means that the pain usually comes on late after a meal, but once started remains constantly present for the whole day. Early and irregular pain is characteristic of nervous irritability of the stomach, so that the more irritable this organ is rendered by the unstable condition of the central nervous system the less likely it is to be relieved of its pain by the taking of food. The factors to be reckoned with, therefore, in respect of the relief of pain by food are the type of case as regards the part of the apparatus affected and the function disordered, and the condition of the central nervous system as regards irritability. The explanation of these facts is clear when we consider how the pain is likely to be relieved.

It seems reasonable to assume that, if we are right in supposing that an overaction of the neuro-muscular mechanism is the cause of gastric pain at various stages of digestion, a cessation of this overaction relieves the pain. We have seen that such a mechanism for inhibiting the muscular movements exists and is brought into play in the normal filling of the stomach. This normal inhibitory mechanism must also be called into action in the condition of irritability of the stomach, but with varying degrees of success, according to the ability of the muscle-fibre to respond normally to the call. Neither can one expect this to be accomplished unless the normal balance between the extrinsic motor and inhibitory nerves is correctly adjusted. This is unlikely to be the case when the central nervous system is irritable. So that primary cardiac and œsophageal cases in which such irritability is the most common are less likely to be relieved by food than pyloric cases. The later the pain comes on the less irritable is the neuro-muscular mechanism and the better it responds by a lengthening reaction to the introduction of food, so that on the whole the pyloric type of case is more easily relieved. Nevertheless, pain coming on in half an hour after food is not uncommonly relieved, and pain which begins almost at once after food may be partially or temporarily relieved by the act of

filling the stomach. In other words, whilst eating his meal the patient is usually free from pain, which comes on again some short time after the meal is ended. This is due to the receptive relaxation of the stomach on swallowing through the vagus. The same remarks apply to those cases of late pain, in which the nervous irritability has become so excessive that the pain has commenced to appear early and lasts constantly in the severer attacks. Œsophageal pain is relieved for two reasons. In the first place, this symptom may be secondary to gastric irritability and when the latter is removed by food the œsophageal pain disappears. Secondly, the act of swallowing temporarily clears the œsophagus of material likely to irritate either the mucous membrane or muscular coat, but the symptoms are very likely to recur as will be described later. In addition to this inhibitory influence in putting an end to the muscular over-action which is causing the symptoms, it is self-evident that another factor must be concerned—namely, the removal of the cause of the disturbance, otherwise it is doubtful whether inhibition would achieve its object so frequently.

The actual exciting cause of the muscular over-action and that which determines its appearance at a stated regular time, is the condition of the gastric contents as regards their irritant nature. This increases as digestion proceeds owing to the increasing acidity and to the fact that the least irritating and most digestible portions leave the stomach first. The effects of each of these two factors are neutralised by the eating of food. The meal dilutes the residual contents of the stomach and if it be rich in protein, combines with the free HCl. An alkali without materially increasing the bulk of the gastric contents frequently relieves the pain by neutralising the free HCl; but food not uncommonly relieves the pain when there is a normal acidity or no free HCl in the stomach at all. Of 130 cases of pain in the sterno-umbilical region, 48 showed hyperacidity, 29 normal acidity, and 53 diminished acidity or achlorhydria. Of these cases 42 were *relieved by food* as shown in Table VI.

TABLE VI.—*Relief of Pain by Food.*

Acidity.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Hyperacidity ..	—	1	17	—	=18
Normal acidity ..	—	4	9	—	=13
Diminished acidity or achlorhydria..	—	3	8	—	=11
Total	—	8	34	—	42

In all these cases of relief by food the pain occurred usually later than one hour after food. Forty-three were *unrelieved* as in Table VII.

TABLE VII.—*Pain Unrelieved by Food.*

Acidity.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Hyperacidity ..	4	2	2	5	=13
Normal acidity ..	2	1	1	4	= 8
Diminished acidity or achlorhydria..	6	7	1	8	=22
Total	12	10	4	17	43

In these cases in which the pain was not relieved it occurred especially in the early stages of digestion or irregularly.

In the remaining 45 cases the *relief was temporary*, partial, occasional, or by vomiting. Of these, 17 showed hyperacidity, 8 normal acidity, and 20 diminished acidity. It is quite clear, therefore, that food may relieve the pain whether the gastric contents are acid or neutral in reaction; that when the pain occurs late it is in either case more likely to be relieved than when it appears early or irregularly; and that even when hyperacidity is present the pain may not be relieved at all. In the case of the relief of late pain the contents are neutralised and diluted if they are acid; but diluted only if they are neutral; and in both cases the bulk of the meal brings into play the inhibitory mechanism. The latter is the only factor concerned in the relief of pain occurring in the earlier stages of digestion, when the symptoms depend more upon the condition of the nervous system than upon that of the nature of the gastric contents, and the relief in this case is therefore more doubtful.

ERUCTATION.

Eructation is due to excessive pressure in the stomach in relation to the tone of the cardiac sphincter at the time. Both fluid and gas may be brought up, but it is particularly gas in the stomach upon which the patient concentrates his mind and endeavours to eructate in order to relieve his symptoms. He thus acquires the habit, which at the same time involves the swallowing of air. Nevertheless, a good deal may be learned as to the course of events in the stomach from a study of eructation, because in addition to its occurrence as a symptom and the habit arising from it, the condition gives rise to changes in the œsophagus which cause secondary œsophageal symptoms. It is necessary to speak separately of the eructation of fluid and gas, although it is not easy to do so because they so often occur together. This analysis is as accurate as can be obtained, for it must be remembered that in dealing with all these symptoms a generous allowance must be made for errors, which are inseparable from the study of symptoms, particularly such irregular ones as those now under consideration.

Eructation of Fluid.—The patient complains of the fluid tasting like acid or vinegar, or as being bitter, tasteless, or of some other taste imparted by the stomach contents. There is no difficulty in selecting a definite group in which acid eructations occur, but the second group presents difficulties, although the taste may be uniformly bitter or otherwise, for the patient may be doubtful whether it has any acid taste or not, or occasionally it may be acid but usually not.

Of 677 cases fluid was eructated by 307, giving a percentage of 45·3. The fluid was definitely acid in 164 cases, and in 143 it belonged to the second group.

Of the 164 cases with *acid eructations* 101 were associated with isolated areas of pain and 63 with combined areas. The total number of cases with isolated pain examined was 461, so that of these 101 eructated acid-tasting fluid. A combination of the areas of isolated pain which represent the two portions of the stomach and the œsophagus respectively gives the following percentages:—

Total cardiac cases ..	..	143	with acid eructations in	23 (16 %)
,, pyloric ,, ..	..	201		57 (28·3 %)
,, œsophageal cases	..	117		21 (17·8 %)
		461		101

So that acid eructations are more common in pyloric than in cardiac or œsophageal cases, and in the two latter they are more or less equal in number.

Of the 143 cases with *eructations of bitter, tasteless, or doubtfully acid fluid* 86 occurred with isolated pain and 57 with combined pains. Combining the areas of isolated pain which represent the two portions of the stomach and the œsophagus respectively, the following percentages are obtained:—

Total cardiac cases	..	143	with bitter, &c., eructations in	33 (23 %)
,, pyloric ,,	..	201		29 (14·4 %)
,, œsophageal cases	..	117		24 (20·5 %)
		461		86

It may be very generally stated that this type of

eructation is a little more characteristic of cardiac and œsophageal pain than of pyloric pain, whereas acid eructations are more characteristic of pyloric pain. I shall show later that the so-called hyperchlorhydria is really a condition of irritability of the pyloric sphincter in which its function, as regulator of the acidity of the gastric contents in the later stages of digestion, is interfered with. Hyperacidity of the gastric contents is the usual but not the necessary result, since the condition may occur when the gastric juice is lessened in amount, in which case the acidity may be diminished, and the eructated fluid doubtful. On the other hand, in affections of the body and œsophagus the gastric contents are neutralised normally, and the eructated fluid is neutral and frequently bitter from the presence of peptones or bile; moreover, hypochlorhydria is commoner in affections of the body. If eructation, however, appears early before neutralisation has occurred then the fluid may taste sour.

Now it is quite clear that a primary irritation of the œsophagus will not give rise to the eructation of acid material, so that such patients must either be cases secondary to irritability of the stomach or the eructation must have been voluntarily produced in the effort to bring up gas and so relieve the symptoms. This question can only be settled by a careful consideration of the case at the time of examination. On the other hand, the eructation of tasteless and neutral fluids may occasionally be entirely due to the œsophagus, the fluid consisting of saliva and mucus which has been swallowed and retained in the œsophagus owing to hypertension of the cardiac sphincter, as Hurst [1] describes.

Fluid Eructated.—The material is usually a thin, watery fluid, and food may be present if the eructation occurs early or even late, if the stomach empties slowly, and there is diminished acidity. The acidity is due to HCl, as the formation of organic acids by carbohydrate fermentation is practically unknown in functional disturbance of the stomach. The amount of fluid eructated naturally varies considerably, and is at its maximum in the condition of hypersecretion of gastric juice, particularly if the stomach empties slowly. In such a condition large amounts may be eructated and spat out in mouthfuls at irregular times and in a nervous subject vomiting may result. Sometimes the patient feels a preliminary sudden tense feeling or even a pain as the stomach contracts, which may awaken him in the night; but large amounts may be present in the stomach without any eructation if the stomach is not irritable. The patient may also eructate fluid soon after a meal, and in such cases, when an opaque meal is given, the food may be seen by the X rays to fall to the lower pole of the stomach through the fluid. The reaction of the fluid depends upon the neutralisation process, if the pylorus is acting normally the reaction is neutral, but if pyloric hypertension is present it is acid. Another possible factor is the passage of neutral chloride under certain circumstances through the gastric mucous membrane. When large amounts of fluid are eructated the condition is spoken of as pyrosis or, particularly if the fluid is neutral, as waterbrash. It has been considered that this waterbrash is largely composed of saliva which has been swallowed in considerable quantity. It can, however, be shown that the fluid of waterbrash is chiefly derived from the stomach by estimating the amount of total chloride it contains, for human saliva only contains between 0·05 and 1 per cent. chloride. In one case eructation occurred two hours after food and in the night, beginning with a sensation as of "something turning over in the stomach." The eructated fluid contained 0·116 per cent. total chloride. From the lower end of the œsophagus were extracted 2 or 3 c.c. of mucus; and at the same time from the stomach was extracted a fluid containing 0·23 per cent. total chloride. In another case the eructated fluid contained 0·158 per cent. total chloride, and the contents extracted from the fasting stomach 0·23 per cent. total chloride. The smaller figures in the eructated fluid are due to dilution during its passage from the stomach. The eructation constituting waterbrash is not essentially different from any other eructation; it is merely a variety in which the sufferer is the subject of hypersecretion.

Eructation of gas, which is practically always air swallowed with the food or with the saliva, or voluntarily, is such a constant symptom that it would seem of little value in diagnosis, but its study is of some use. Out of a total of 694 cases 588 eructated gas, and, as might be expected, all positions of pain were almost equally liable to it.

A combination of the areas representing the two portions of the stomach and the œsophagus gives the following:—

Total cardiac cases ..	.. 153	with gas eructation in	135 (88·2 %)
„ pyloric „ ..	.. 210		165 (79·3 %)
„ œsophageal cases	.. 119		100 (84·0 %)
	482		400

This is a different result from that obtained in the case of fluid eructations, in which the percentage is relatively small, for the majority of patients suffering from gastric disturbance of any type apparently eructate gas in some measure. Comparing this symptom with the sensation of fullness, it will be remembered that the latter symptom was also felt by the majority of cardiac and pyloric cases, but only by half the œsophageal patients. The sensation of fullness in the body of the stomach gives rise to the desire to eructate in order to relieve the feeling, and the voluntary act which usually takes in air also is much more likely to expel gas than fluid, since gas occupies the fundus and this is the part compressed. So that the similarity in the frequency of fullness and gas eructation in cardiac and pyloric cases suggests that the latter symptom is of voluntary origin. This hypothesis is supported by the fact that most œsophageal cases eructate gas, whilst only about half of them feel the sensation of fullness. There is no mechanical reason whatever why the other half of the œsophagus cases who do not feel fullness should eructate gas, and yet they do so; the only reason can be that they do so voluntarily in order to relieve the sensations they feel in the œsophagus. If the eructation of gas were due to excessive pressure in the body of the stomach without any voluntary effort we should expect the percentage of gas eructation to be much smaller and to approximate more closely to that of fluid eructation. This habit of voluntary eructation is difficult to resist by most patients and is more easily established in proportion to the neurotic tendencies of the individual. In the neuropathic patient it may be so marked as to constitute the condition "eructatio nervosa," when at the least feeling of discomfort an attack of air swallowing and eructation commences. In the normal subject the constant swallowing of saliva, mucus, and air in the condition of pharyngeal catarrh increases the air space in the stomach and causes the feeling of fullness and the habit of constant eructation may arise.

The symptom of fluid eructation may now and again also develop into a habit, but in this case there is no air swallowing and the X rays shows a simple contraction of the diaphragm forcing the gastric contents into the œsophagus. The patient may come up complaining of vomiting. Food may be brought up in this way, soon after eating, for years after the fashion of ruminators, but it is spat out, and not masticated and re-swallowed with enjoyment; or sour or neutral fluid may be brought up in quantities at varying times after meals.

I have already stated that irregular pain is more particularly seen in connexion with the body of the stomach in gastric irritability, and that it is frequently dependent upon causes which increase the pressure in the stomach quite apart from the regular abnormalities in the muscular movements of that organ. These same causes give rise to regurgitation into the œsophagus, for example, sitting in a cramped position,

stooping to work, lying down. The patient complains that he gets tightness or pain in the chest with or without eructation. Now it is quite clear that regurgitation occurs to different degrees depending upon the pressure applied to the gastric contents and the varying degrees of resistance offered by the cardiac sphincter, so that a complete eructation occurs into the mouth or an incomplete one into the œsophagus only. There can be no doubt that these incomplete regurgitations are very common and are an important cause of œsophageal sensations. The patient often complains of pain or fullness rising up into the chest, where it takes the form of a tight band, or a lump which may shift up or down and feel like a "wandering bubble," and which may be described as breaking in the upper part of the chest or the throat with a bubbling noise. One patient complained of a pain occurring every few minutes in the central sterno-umbilical region; it passed up to the ensiform cartilage, there attained its maximum, and slowly disappeared with a bubbling sound. If free eructation occurred the pain disappeared at once. Another patient with copious fluid eructations said if the material came up there was no pain, but if not he had pain in the region of the ensiform or an aching, burning sensation or as of a lump sticking there. These instances could be multiplied indefinitely. The symptoms produced depend upon the resulting muscular tension set up in the œsophagus and its sensitiveness, which in their turn depend upon the condition of irritability of the nervous system. Regurgitation can often be seen by the X rays in the absence of any symptoms whatever. Eructations of gas are, therefore, of no value in most cases in the diagnosis of the condition of the stomach, except that when excessive they indicate an unstable nervous system. They are, however, of importance in that the retention of gas in the œsophagus causes symptoms more particularly in the upper part of the chest. Eructations of fluid are, on the other hand, of considerable importance as indicating the state of affairs in the stomach, and are much less dependent upon the condition of the nervous system. They give rise to symptoms more particularly in the lower part of the chest. Complete eructations relieve the pain, at all events for a short time, by lessening the pressure in the stomach and so diminishing the contraction tension of the muscular fibres. Poulton described this relief to the pain of gastric ulcer as occurring on lessening the pressure by the passage of a tube.

VOMITING.

Vomiting is the natural means whereby the stomach is relieved of its contents when they are sufficiently irritating. The stimulus acts upon the vagus endings in the mucous membrane so that vomiting is likely to be more common when the irritant focus is in the stomach than when it is in the œsophagus, in which case the vomiting is of a different type. It relieves the symptoms if the stomach is completely emptied, unless there is a great deal of nervous irritability of the stomach.

It is commonly preceded by nausea, but not invariably so. As a symptom of diagnostic importance, nausea is not of much value, because it is found so irregularly in such a multitude of conditions; on the other hand, vomiting is of the greatest importance. Vomiting occurred in 230 of the series of 1009 cases—that is to say, in 22·8 per cent. It is thus a much less frequent symptom than pain and indicates a higher degree of irritation of the stomach. It is induced in several different ways so that to assess its value and significance a careful history of the origin and onset of the vomiting must be taken to put it into its true category, for however it may arise the reflex tends to become more excitable and the vomiting lose its initial character. The vomiting may then become incessant, occurring if a bad attack is present whenever anything, even water, is put into the stomach. Vomiting is commonly induced not only by conditions of the alimentary canal but also by reflexes from other parts of the body, by affections of the central nervous system, and by blood poisons. It is thus a very important symptom, so that its associated conditions and the circumstances which indicate that it is of gastric origin deserve close attention. Of the 230 cases, 158 occurred with isolated areas of pain and 72 with combined areas. The isolated areas are shown in Table VIII.

TABLE VIII.

Region.	Cases.	Out of a total of—
Upper sternal	4	53 (7·5%)
Lower sternal	18	119 (15·1%)
Upper st.-umbilical	55	223 (24·6%)
Middle „	43	152 (28·2%)
Lower „	17	77 (22·0%)
Right 9 c.c.	16	35 (45·7%)
Left 9 c.c.	5	14 (35·7%)
	158	673

On combining the areas which represent the two portions of the stomach and the œsophagus respectively, the following is obtained:—

		With vomiting in
Cardiac cases	223	55 (24·6%)
Pyloric cases	278	81 (29·1%)
Œsophageal cases	172	22 (12·7%)

Vomiting is thus of almost the same frequency in pyloric as in cardiac cases, the difference being very little, whilst it is only half as frequent in œsophageal cases. It seems, therefore, quite clear that cases in which the irritable focus is situated in the body or pyloric end of the stomach are more likely to vomit than when it is situated in the œsophagus. This fact is due to the different causes operative in each case. The chief cause of vomiting is *pain*, or at all events the same degree of irritation which causes severe pain is likely to cause vomiting, for in the 230 cases of vomiting this act occurred when the pain was at its height in 146—that is to say, in 63·4 per cent. Of these 146 cases of vomiting dependent upon pain, 97 occurred with isolated pain areas as in Table IX.

TABLE IX.

Region.	Cases of vomiting due to pain.	Out of a total of—
Upper sternal	0	4 (0)
Lower sternal	5	18 (27·7%)
Upper st.-umbilical	32	55 (58·2%)
Middle „	34	43 (79·0%)
Lower „	14	17 (82·3%)
Right 9 c.c.	10	16 (62·5%)
Left 9 c.c.	2	5 (40·0%)
	97	158

Combining the areas which represent the two portions of the stomach and the œsophagus respectively, the following is obtained:—

		With vomiting due to pain.
Total body cases	55	32 (58·2%)
„ pyloric „	81	60 (74·0%)
Total œsophageal	22	5 (22·7%)

These figures show that pain due to the pyloric region of the stomach is more likely to cause vomiting than pain due to the body and that œsophageal pain is least likely of all to cause vomiting.

The next cause of vomiting is *regurgitation of fluid* from the stomach. There were 27 cases of this type in the series, giving a percentage of 11·7. The fluid either irritates the fauces or enters the larynx and causes coughing and retching. Attempts at voluntary eructation also lead to retching. Vomiting is thus excited and may become established. This condition is seen especially in neurotic subjects and occurs more particularly in œsophageal cases. More than half the vomiting in œsophageal cases is due to this cause, but only a small proportion of cases of vomiting due to irritation of the stomach are so produced.

Twenty-one of the 27 cases occurred in isolated areas and were distributed as in Table X.

TABLE X.

Region.	Cases.	Due to regurgitation.
Upper sternal	4	4 (100%)
Lower sternal	18	10 (55·5%)
Upper st.-umbilical	55	3 (5·4%)
Middle ,, ...	43	2 (4·6%)
Lower ,, ...	17	0 (0)
Right 9 c.c.	16	1 (6·2%)
Left 9 c.c.	5	1 (20·0%)
	158	21

Combining these areas the following is obtained :—

Cardiac cases	55	3 (5·4%)
Pyloric cases	81	4 (5·0%)
Œsophageal cases	22	14 (63·3%)

Another cause of vomiting is the *voluntary one*, in which the patient makes himself vomit to relieve his symptoms. He thinks there is "something to come up," eructation does not relieve him, and therefore he makes himself vomit by irritating his fauces; or he has experienced relief by vomiting and develops the habit to relieve his pain. He may find after a while that he cannot stop vomiting and comes up complaining of it as the chief symptom.

There were 23 cases of voluntary vomiting in the 230, giving a percentage of 10. The distribution of 16 cases associated with isolated pain areas is as shown in Table XI.

TABLE XI.

Region.	Cases.	With voluntary vomiting.
Upper sternal	4	0 (0)
Lower sternal	18	1 (5·5%)
Upper st.-umbilical	55	7 (12·7%)
Middle ,, ...	43	4 (9·3%)
Lower ,, ...	17	2 (11·7%)
Left 9 c.c.	5	0 (0)
Right 9 c.c.	16	2 (12·5%)
	158	16

Combining these areas we obtain the following :—

Body	55	7 (12·7%)
Pyloric	81	8 (9·8%)
Œsophageal	22	1 (4·5%)

Only a small proportion of people with œsophageal symptoms make themselves vomit, and of these the affection is in the lower œsophagus. More people with pain referable to the stomach vomit voluntarily, especially those with pain in the cardiac portion. Vomiting is thus chiefly produced to relieve pain in the stomach itself.

These three factors—pain, regurgitation, and voluntary vomiting—account for the great majority of vomiting in gastric disturbance, for 134 out of 158 cases fall into these groups—i.e., 84·8 per cent. That is to say :—

42 out of 55	body cases	76·3 per cent.
72 ,,	81 pyloric cases..	88·8 ,,
20 ,,	22 œsophageal cases	90·9 ,,

It is thus evident that the majority of cardiac and pyloric cases vomit on account of pain or voluntarily to produce its relief, whilst most œsophageal cases vomit as the result of faucial irritation from regurgitation; and those who vomit on account of pain are affections of the lower part of the œsophagus for the most part.

The remaining 34 cases—that is, 14·7 per cent. of the total—complained of vomiting at quite irregular times, unconnected with any of the causes discussed above. They were all cases in which the nervous element was especially marked. The symptoms were œsophageal in two cases only, and the remainder of gastric origin. Sixteen of these patients were unable to assign any cause for the vomiting, which occurred at any time. Ten were liable to vomit whilst eating, or quite soon afterwards; either the act of masticating and swallowing caused the vomiting, or the stomach was at the time so irritable that contact of the food with the gastric mucous membrane acted as an emetic. The characteristic feature of this type is its variability according to circumstances, which shows that it is a neurotic manifestation. In five cases the vomiting was preceded by a sudden attack of nausea, and in three quite clearly followed on any emotional disturbance.

WASTING.

The remaining symptoms of gastric disturbance do not assist much in explaining the course of events in dyspepsia, and it is not my intention to discuss generally all the manifestations of this disorder. The state of the tongue and other symptoms upon which such stress used to be laid are of little value. Allusion may, however, be made to *wasting*, because it is such an important symptom in cancer and pyloric obstruction and also in certain remote diseases with gastric symptoms. Functional disturbance of the stomach, including uncomplicated ulcer, does not cause wasting, but this symptom may be associated with it in three conditions. The first is severe vomiting; the second is the voluntary reduction of the food to relieve the symptoms or because the patient is afraid to eat; and the third is loss of appetite with nausea. All these are mostly indications of a neurotic individual. The patient cuts off first one foodstuff and then another which he imagines disagrees with him, till he is living on a very reduced diet and becomes wasted, for he usually cuts off the wrong articles. The wasting impairs his nervous system and the symptoms become aggravated. Two other conditions may be referred to briefly, and these are the *condition of the appetite* and the *sex* of the individual; the former because it is commonly supposed to be an index of the condition of the gastric secretion and loss of appetite is of such regular occurrence as an early symptoms of carcinoma ventriculi; the latter, because of the great instability of the nervous system in the female sex.

APPETITE.

Out of a series of 233 cases, 135 had a good, 37 a fair, and 61 a bad, appetite. Of these cases 146 suffered from pain affecting isolated areas.

Combining these areas together we obtain the results shown in Table XII.

TABLE XII.

Region.	Good ap.	Fair ap.	Bad ap.	—	
Cardiac cases.. ..	31	11	12	=54	146
Pyloric cases	42	8	9	=59	
Œsophageal cases ..	18	5	10	=33	

The percentages derived from the figures given in Table XII. are as follows :—

		Per cent.
Cardiac cases.	Good appetite in 31 of 54.. ..	57·4
	Fair or bad appetite in 23 of 54 ..	42·6
Pyloric cases.	Good appetite in 42 of 59.. ..	71·1
	Fair or bad appetite in 17 of 59 ..	28·9
Œsophageal cases.	Good appetite in 18 of 33.. ..	54·5
	Fair or bad appetite in 15 of 33 ..	45·4

The appetite was good in most of the pyloric cases. These include the most robust individuals, usually with hyperacidity of the gastric juice and sometimes with hypersecretion, and contain the smallest number of neurotics. A smaller number of cases affecting the body or œsophagus had a good appetite, for, practically speaking, about half had a good and half had a fair or bad appetite. These include the largest number of neurotics. The œsophageal cases with a good appetite were especially those in which the lower œsophagus was affected, most of whom were likely to be secondary to the pyloric region of the stomach.

SEX.

Out of a total of 830 cases, 476 were males and 354 females. Table XIII. is an analysis of the isolated areas of pain:—

TABLE XIII.

Region.	Males. Occurrence of pain. At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	Cases.	Females. Occurrence of pain. At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	Cases.
Upper sternum ..	7	2	2	16	= 27	10	1	1	13	= 25
Lower sternum ..	8	9	20	11	= 48	7	6	12	17	= 42
Upper st.-umb. ..	11	13	41	13	= 78	24	16	20	23	= 83
Middle ,, ..	5	3	60	7	= 75	7	9	22	15	= 53
Lower ,, ..	—	3	31	3	= 37	1	1	14	1	= 17
Right 9 c.c. ..	—	3	22	—	= 25	—	1	6	—	= 7
Left 9 c.c. ..	—	—	13	1	= 14	1	—	6	2	= 9
Total	31	33	189	51	304	50	34	81	71	236

Combining the areas given in Table XIII., we obtain the following:—

Males.

Cardiac cases ..	78	out of a total of	304	25·6%
Pyloric ,, ..	151	,,	304	49·6%
Œsophageal cases	75	,,	304	24·3%

Females.

Cardiac cases ..	83	out of a total of	236	35·1%
Pyloric ,, ..	86	,,	236	36·4%
Œsophageal cases	67	,,	236	28·3%

In males the pyloric region is affected twice as often as the body of the stomach. In females the pyloric region or the body are affected to about an equal degree. The œsophagus gives rise to symptoms about equally in both sexes. This result was to be expected, since females have the more unstable nervous system, and therefore that part of the stomach most affected by nervous disturbance should be relatively more affected in them than in males. Still, females suffer as much from the pyloric end as the body, and so it is hardly justifiable to say that the relatively high proportion of the affections of the body in this sex is due to the fact that their stomachs are more of the so-called hypotonic type than are those of males. Neither is it justifiable to say that the form of dyspepsia from which the patient suffers is due to the shape of the stomach. Mills described four normal types of stomach according to the bodily habitus of the individuals possessing them. (1) The hypersthenic type, comprising about 5 per cent. in which the stomach is high in position, has the fastest motility, and most marked tonus of any type. (2) The sthenic type, comprising about 48 per cent., in which the stomach is fairly high, with good tonus and fairly rapid motility. (3) The hyposthenic type, comprising about 35 per cent., in which the stomach is fairly low, with rather poor tonus and motility. (4) The asthenic type, comprising about 12 per cent., in which the stomach is often largely pelvic, has poor tonus and slow motility. It is quite certain that normal individuals vary about a certain average, not only as regards the position and shape of the stomach, but also as regards each of its functions. The type of stomach affected must produce some modification in the resulting processes produced by any disturbance, but this effect must not be over-exaggerated, for all people, whatever the sex or shape of the stomach, are liable to the same affections, and any difference in the liability of any individual to any particular affection is due to the different make-up of the nervous system and the habits of the patient. The nervous tendency of the female is illustrated by comparing the two sexes as regards time of onset of symptoms. The female shows in every position of the pain a much greater tendency than the male to feel the pain quite early in the digestive process and also irregularly. For example, in the upper sterno-umbilical position the 78 males show regular pain from ½ hour upwards in 54 cases, but early and irregular pain in 24 only. The 83 females, on the other hand, show regular pain from ½ hour upwards in only 36 cases, but early and irregular pain in 47 cases. And so all the way through. The greater number of cases of late pain in each position in the male appears to indicate that more of the cardiac and œsophageal cases in this sex are secondary to the pylorus and less of primary condition than in the female.

It is quite common for the hyposthenic and asthenic types of stomach to be referred to as "dropped." An organ can only be said to be dropped if it has originally occupied a higher position than at present, but all these four types are normal to the individual possessing them and are developmental. The only form of gastroptosis which exists is that associated with varying degrees of visceroptosis owing to relaxation of the abdominal wall, and if any disorder is present, whether it is purely nervous or one which delays the emptying of the stomach, such stomachs must suffer more severely than those unassociated with this condition.

ORGANIC LESIONS OF THE STOMACH.

The only two lesions which need be mentioned here are gastritis and uncomplicated ulcer. Gastritis is, no doubt, common enough; it is present to some degree in all chronic ulcers. I shall refer to this condition later on, and at the moment merely say that, when it does produce symptoms, they are indistinguishable from those due to irritability of the body of the stomach, except by the type of vomiting and an examination of the stomach contents, and they are rare in comparison with the bulk of gastric cases. Ulcer, on the other hand, is a very common affection and of great importance from our present point of view, because we know its position and therefore where the irritable focus causing the symptoms is situated. Whichever side of the pylorus the ulcer is situate, its effect in causing irritation of the sphincter is the same, so that duodenal ulcer must be considered with gastric ulcer. A comparison of the pain of gastric and duodenal ulcer with that of the cases already examined shows that it is essentially the same in all particulars and due to the same causes. There are two series of cases; the first is one of 85 cases of duodenal ulcer, and the second of 59 cases of gastric ulcer. All were operated upon and shown to be free from complications. Of the 85 cases of *duodenal ulcer*, 70 showed isolated pain and 15 various combinations. The isolated areas of pain were as follows:—

Upper sterno-umbilical region ..	..	in	9 cases.
Middle ,, ,, ..	..	,,	22 ,,
Lower ,, ,, ..	..	,,	16 ,,
Right 9 costal cartilage region ..	..	,,	17 ,,
Right and left 9 c.c. region	..	,,	6 ,,

Combining these areas together so as to represent the different regions of the stomach, the following result is obtained:—

Cardiac pain	..	12·2	per cent. of cases.
Pyloric pain	..	87·1	,, ,,

It is, therefore, quite clear that duodenal ulcer causes pyloric pain in the majority of cases, but in a certain number the pain is cardiac. In exceptional cases a chronic duodenal ulcer causes no pain whatever in any position, the only effects being a sense of fullness and regurgitation of the gastric contents. Now this result agrees with our conception of pyloric irritability already formed—namely, that pyloric pain is the usual result, but sometimes backward effects without pain occur, the symptoms being attributable to the body and œsophagus only. The

difference from simple functional disorder is that a larger proportion of patients with duodenal ulcer suffer from pyloric pain, having the empty sensation of hunger, and a smaller proportion backward effects only. The explanation is that duodenal ulcer belongs chiefly to the group I have mentioned, in which the pain occurs later than usual and when the stomach is almost empty, hypersecretion is present, and pyloric spasm is more common. Of the 59 cases of *gastric ulcer*, 23 were described by the operating surgeon as being near the pylorus and 36 in the body of the stomach.

The 23 *pyloric cases* gave rise to localised pain in 18 and combined pain in 5 cases. In 18 cases the pain was distributed as follows:—

Upper sterno-umbilical area	in 2 cases.
Middle „ „	„ 6 „
Lower „ „	„ 8 „
Right 9 costal cartilage	„ 1 case.
Left 9 c.c.	„ 1 „

The regions of the stomach represented by these areas are as follows:—

Cardiac pain	in 11·1 per cent. of cases.
Pyloric pain	„ 88·8 „

Pyloric ulcer, therefore, usually causes pain in the pyloric area, but sometimes, as in duodenal ulcer, a backward effect on the body of the stomach is the only symptom. The 36 ulcers in the *body of the stomach* caused pain in isolated areas in 20 and combined areas in 16. The pain in the 20 body ulcers was distributed as follows:—

Upper sterno-umbilical area	in 12 cases.
Middle „ „	„ 5 „
Lower „ „	„ 2 „
Left 9 c.c.	„ 1 case.

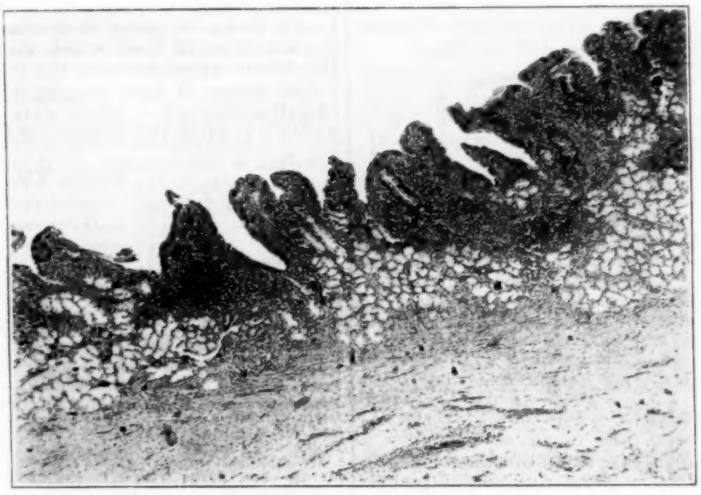
The percentages affecting the different regions of the stomach are as follows:—

Cardiac pain	in 60 per cent. of cases.
Pyloric pain	„ 40 „

The majority of ulcers of the body of the stomach cause definite cardiac pain, but in a smaller number of cases pyloric pain. This fact has been commented upon before by various observers and there can be no doubt that an ulcer of the small curvature situated in the pyloric vestibule, although some distance from the sphincter, may give rise to irritability of this structure through the mysenteric plexus.

The number of these cases is small, but they are enough for our purpose. The patients with multiple areas of pain in all these cases showed similar combinations to those already described. These results appear to indicate that the pain is not produced by irritation by the gastric contents of any afferent nerve-fibres in the base of the ulcer, because if this were the case the position of the referred pain should always accurately indicate the position of the ulcer. The alternative explanation is that the pain indicates the particular segment of the stomach which the ulcer is chiefly irritating. A duodenal ulcer or a pyloric ulcer acts as a focus of irritation to the pylorus with secondary cardiac symptoms. The pain is nearly always of the pyloric type, but occasionally the body of the stomach is the source of pain. An ulcer in the body of the stomach acts as a focus of irritation to the cardiac portion of the stomach, but in a smaller proportion of cases irritates the pylorus owing to its position, so that the pain, though usually of the cardiac type, is often of the pyloric type. Not only is the pain of an ulcer of precisely the same nature as that of simple functional disturbance, but it obeys all the laws applying to it. There is no distinction between them and it is quite impossible to separate them clinically. The pain comes on during digestion and ceases when food is eaten or when the stomach is empty or after vomiting. The pyloric and duodenal cases show the pyloric type of pain—that is to say, pain occurring in the later stages of digestion—and the cardiac cases the cardiac type of pain which occurs earlier and often irregularly.

FIG. 2.



Scar of duodenal ulcer. The patient complained of gnawing pain one hour after food, relieved by eating.

These ulcers show combinations of the pain areas of precisely the same nature as the functional cases, and the posterior pain corresponds to the pain in front. All the remaining characters described in relation to gastric pain—for example, the increasing irritability of the stomach with the lapse of time, the intervals of freedom from alternating with attacks of pain, the ready relief of pain by dieting, the dependence of pain upon the condition of the nervous system, and of the health of the patient, the relief of pain by alkalis and food are in agreement with the hypothesis that the pain of gastric ulcer depends entirely upon the fact that the ulcer acts as a focus of irritation to the neuro-muscular mechanism of the stomach. A further point of importance is that the ulcer is still unhealed in the intervals of freedom from pain and the attacks of pain are influenced by exciting causes similar to those existing in functional disturbance. It is quite impossible to foretell in any given case what is the condition of the ulcer. It may be healing, or even healed, and yet the same kind of pain may be present. It is not uncommon to find the ulcer advanced in healing in a fatal case of hæmatemesis, and sometimes ulcers excised by operation are shown by microscopic examination to be healed (Fig. 2). It is also a matter of common knowledge that the abdomen is frequently demonstrated to be free from any organic disease whatever at operations undertaken for the relief of gastric pain mistaken for that of ulcer. The following 33 cases of gastric pain, all of which were thought to be the subjects of gastric or duodenal ulcer, were explored quite thoroughly and no lesion whatever was demonstrable in the

duodenum, stomach, or the rest of the abdomen. They are as shown in Table XIV.

TABLE XIV.

Region.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper st.-umbilical	2	1	2	2	= 7
Middle st.-umb. ..	1	2	2	3	= 8
Lower st.-umb. ..	—	—	1	2	= 3
Upper sternum ..	—	—	—	1	= 1
Lower sternum ..	—	—	—	1	= 1
Right 9 c.c.	—	—	4	—	= 4
Right and left 9 c.c.	—	—	1	—	= 1
Left costal m. whole	—	1	1	—	= 2
Upper st.-umb. and right 9 c.c... ..	—	—	1	—	= 1
Upper st.-umb. R. and L. 9 c.c. ..	—	—	—	1	= 1
Upper st.-umb. and left 9 c.c.	—	—	1	—	= 1
Upper st.-umb. and whole sternum ..	—	—	1	—	= 1
Middle and lower st.-umb.	—	—	1	—	= 1
Upper middle and lower st.-umb. ..	—	—	1	—	= 1
Total	3	4	16	10	33

This series is not an average sample of the dyspeptic population, because the relative number of pyloric cases is too high, and of the œsophageal cases too low. Considering the isolated areas of pain only, the percentages are as follows:—

Œsophageal pain	8 per cent.
Cardiac pain	28 „
Pyloric „	64 „

Of the total dyspeptic cases the percentages are:—

Œsophageal pain	25·3 per cent.
Cardiac pain	33·4 „
Pyloric „	39·7 „

They, however, agree quite well with a series of ulcer cases in which pyloric pain is relatively high. The ulcer cases quoted above show the following percentages:—

Œsophageal pain	Nil.
Cardiac pain	27·7 per cent.
Pyloric „	71·9 „

The right type of case has, therefore, been selected for operation, except that no case showing isolated œsophageal symptoms should be subjected to operation without some other very definite evidence of ulcer. The treatment for an ulcer of the stomach is precisely the same as that for acute or chronic irritation of the stomach—that is to say, the adoption of the appropriate means to remove the gastric irritability produced by the ulcer—namely, rest for the stomach, reduction of its work, and reduction of its acidity. Finally, the curves of acidity obtained from cases of ulcer demonstrate what parts of the stomach are irritated. My own statistics show that some 78·9 per cent. of the curves obtained from cases of duodenal ulcer are of the pyloric type, and that about 90 per cent. of the curves of acidity of pyloric ulcers show similar curves. On the other hand, about 77·7 per cent. of the curves obtained from ulcers of the body of the stomach are normal in type and indicate that the pylorus is acting normally. Ryle [2] quotes a series of cases of duodenal ulcer showing hyperchlorhydria in 68 per cent., and of gastric ulcer showing normal curves in 75 per cent. of cases. Hunter [3] gives 88 per cent. hyperchlorhydria in duodenal ulcer and 67 per cent. in pyloric ulcer, and 35 per cent. in cardiac ulcer.

REFLEX EFFECTS ON THE STOMACH.

Irritability of the stomach may arise as a reflex effect from some other organ, more especially a part of the alimentary system. Craven Moore [4] calls this reflex dyspepsia. Our certain knowledge of this subject is fragmentary and it is difficult to decide what reliance should be placed upon the X ray appearances described. A great deal has been written from different points of view on the question as to how the stomach is affected by these reflexes; in fact, too much to review in a clinical study of this kind. From our point of view as clinicians the most important parts from which such reflexes arise are the biliary apparatus and the intestine.

Gall-stones.—I have examined a series of 56 cases of gall-stones, all of which were operated upon, and Table XV. gives the analysis of their pain.

TABLE XV.

Region.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper st.-umbilical	2	1	3	2	= 8
Middle st.-umb. ..	—	—	2	—	= 2
Lower st.-umb. ..	—	—	—	1	= 1
Upper sternum ..	1	—	—	2	= 3
Lower sternum ..	2	—	3	3	= 8
Right 9 c.c. ..	—	—	3	1	= 4
Right and left 9 c.c.	—	—	—	1	= 1
Left costal margin .	—	—	—	1	= 1
Upper and middle st.-umbilical ..	1	—	—	1	= 2
Middle and lower st.-umbilical ..	—	—	—	1	= 1
Sense of fullness and gaseous eructations	—	—	—	—	= 25
Total	—	—	—	—	56

Almost half the cases complained of a simple feeling of fullness and eructation of gas, symptoms attributable to the body of the stomach, since only five of the patients had acid eructations.

Combining the localised pain areas the following percentages are obtained:—

Œsophageal pain	40·7 per cent.
Cardiac pain	29·6 „
Pyloric „	29·6 „

There is here an excess of cases affecting the body of the stomach and the œsophagus, which is very much greater if the cases of simple fullness are combined with them.

This, I believe, is in accordance with the general medical notion regarding the gastric symptoms associated with gall-stones. Many series of cases with examinations of the gastric acidity in gall-bladder conditions have been published. For example, a series published by Bonar [5] shows 23 per cent. of cases of hyperchlorhydria, and 78 per cent. of cases of either achlorhydria or normal curves. Another series quoted by Ryle [2] gives 21 per cent. hyperchlorhydria and 79 per cent. normal curves or hypochlorhydria. All these are in agreement with the view that in disease of the gall-bladder the body of the stomach is the part particularly affected, and in a smaller number the pylorus. The time of onset of the symptoms is the same as that in any average series of cases; so that in this reflex dyspepsia the type of symptoms entirely depends upon which part of the stomach is irritated. It cannot be expected that one part should always be exclusively affected, but that the incidence should fall more sharply on one part than another.

Intestine.—It is much more difficult to come to a definite conclusion as to the effects upon the stomach of reflex irritation from the intestine, and I have no conclusive series of cases to present at the moment. As regards appendicitis, I will merely say that I thoroughly agree with those observers, and Walton [6] in particular, who deny the existence of chronic appendicitis except as the end-result of an acute attack. In a series of 64 cases of appendectomy for gastric

symptoms in whom the removal of the appendix produced not the slightest effect—

Œsophageal pain occurred	..	in 15·5 per cent. of cases.
Cardiac pain occurred	.. ..	„ 31·1 „
Pyloric „ „	.. ..	„ 53·3 „

This series is not unlike that in which an operation was undertaken for supposed ulcer of the stomach.

SUMMARY.

1. From a consideration of the position, time of onset, and relief of pain, the conclusion has been reached that there are three fundamental symptom groups constituting dyspepsia, the pyloric, the cardiac, and the œsophageal syndromes, each of which has several different types.

2. There is clinical evidence that the pyloric disorder produces backward effects upon the body and œsophagus, and the cardiac disorder upon the œsophagus.

3. If the patient has neuropathic tendencies the symptoms are modified in certain ways indicated. The body and œsophagus are more likely to be disturbed in such patients than the pyloric region.

4. The chief clinical phenomena of these types of disorder are as follows:—

Pyloric Syndrome.—Pain appearing in the pyloric area during the later stages of digestion. It is accompanied by secondary cardiac symptoms, either an empty hungry feeling, or a sensation of fullness, or of pain. Vomiting occurs with pain in a certain number of cases. Pyloric pain may be absent and secondary cardiac symptoms may alone be present. In all the types of cases acid eructations and secondary œsophageal symptoms commonly occur. The symptoms in all cases are relieved by food.

Cardiac Syndrome.—Pain, or fullness only, appearing in the cardiac area during the early stages of digestion, or moderately late, or irregularly. Vomiting occurs with pain in a certain number of cases. Secondary œsophageal symptoms are common, and the fluid eructated is more likely to be bitter or neutral than acid. The symptoms may, or may not, be relieved by food.

Œsophageal Syndrome.—This is either primary or secondary and consist of pain, or one of the minor sensations, in the œsophageal area. The upper and lower parts of the œsophagus differ, in that the symptoms affecting the latter show, to a considerable extent, similar time relations to food as the body of the stomach; whereas, in the case of the former the symptoms characteristically appear quite early or irregularly. The symptoms of the lower part may or may not be relieved by food, but the relief afforded to those of the upper part is usually only temporary or partial. Vomiting may occur from regurgitation of fluid, which is of the same nature as that of the cardiac syndrome.

5. Disorders of function as the result of local disease, not structurally altering the stomach, are of the same nature as those of the idiopathic malady affecting the particular part of the stomach concerned.

6. Disorders of function primarily due to reflex irritability of the stomach are also the same as those of idiopathic origin, and they chiefly affect one or other part of the stomach, but not exclusively so.

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OVARIAN HÆMORRHAGE SIMULATING ACUTE APPENDICITIS.

A SERIES OF SEVEN CASES.

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OVARIAN hæmorrhage from a ruptured Graafian follicle or corpus luteum is one of the many conditions which may be mistaken for acute appendicitis.

Occasionally reported in the early part of last century, it was then included in a group labelled apoplexy of the ovary. H. W. Wilson,[1] in 1905, seems to have been the first to note its diagnostic confusion with acute appendicitis. Novak,[2] of Johns Hopkins Hospital, who reviewed the literature up to 1917, was able to collect 40 recorded cases, and Brakeley and Farr[3] have published a summary of 14 which were treated at the New York Hospital between 1914 and 1925, all with a pre-operative diagnosis of acute appendicitis. A number of other observers have reported single cases in which, before operation, the condition was thought to be ruptured ectopic gestation.

Of the following series of seven cases, all but one of which came under my observation, six were admitted to the surgical wards of the London Hospital, and one to the Southend Victoria Hospital. The patients were all women between the ages of 19 and 25.

The Cases Described.

CASE 1.—A shoe operative, aged 19, and unmarried, was admitted to the London Hospital on March 21st, 1924. For a week she had had dull pain in the right side of the abdomen, but this had not prevented her from going to work until two days before admission, when it had become much more severe. She complained of nausea but had not vomited. Her bowels had been open daily, though not as freely as usual. She had had no disturbances of micturition and her periods were regular, the last finishing eight days previously. On *examination:* temperature 98·2° F., pulse-rate 96, respiration-rate 24. Tongue moist and furred. Cutaneous hyperæsthesia over the right iliac fossa and over right ligament of Poupart. Tenderness and slight resistance to pressure in the right iliac fossa, but no rigidity of the abdominal muscles. Per rectum, some fullness in the pouch of Douglas, with slight tenderness. No abnormal constituents in urine. At *operation* the appendix was freely movable and normal in appearance. The left ovary was also normal, but in the right ovary there was a swelling, about the size of a large walnut, which had ruptured into the peritoneal cavity. As the ovary was being delivered through the abdominal wound, a round object, the size of a walnut and looking like a mass of blood-clot, contained in a thin membrane, slipped out of the ruptured cysts followed by dark altered blood and fresh arterial hæmorrhage. The cavity of the cyst was obliterated by a running suture, 2 oz. of blood-clot were swabbed out of the pouch of Douglas, and after the appendix had been removed the abdominal wound was closed without drainage. The patient made an uninterrupted recovery and after discharge had no complaints, menstruation being normal. The *pathological report* was: "Hæmorrhagic corpus luteum; no histological abnormality of appendix."

CASE 2.—An unmarried shop assistant, aged 20, was admitted to the London Hospital on May 4th, 1924. She had had abdominal pain for six days, at first generalised, but for the last 48 hours mostly in the right side. She complained of nausea since the onset of the pain, and had vomited twice during the two days before admission. She had taken an aperient on the night previously, and whilst at stool on the morning of the day of admission had been seized with acute pain in the right iliac fossa, followed by vomiting. Her bowels had been open daily since the onset of pain and she had had no dysuria or frequency. Her menstrual periods had been regular, the last finishing 12 days before. On *examination:* distressed; temperature 98·4° F., pulse-rate 100, and respiration-rate 24. Considerable tenderness in right iliac fossa, lessening to the left of the mid-line. Slight rigidity of abdominal muscles of the right side and cutaneous hyperæsthesia above Poupart's ligament. Per rectum, no swelling or tenderness. Nothing abnormal in urine. *Expectant treatment* was adopted, with the patient in Fowler's position, nothing but water being given by the mouth. After 36 hours

her temperature had not risen, but her pulse-rate, after dropping at first to 88, had risen again to 102, and she was having a good deal of pain. *Operation* was therefore decided upon, and the appendix, which was found freely movable and normal in appearance, was removed. The right ovary was scarred and thickened and showed a hæmorrhagic cyst about the size of a large walnut, apparently on the point of rupture. The left ovary was normal. The cyst was opened, and its contents, blood-clot, removed. The cavity was obliterated and the abdomen closed. The patient made an uninterrupted recovery, and two months after discharge her periods were normal and she had no symptoms. The *pathological report* was: "Blood-clot and fragments of lutein tissue; no histological abnormality of appendix."

CASE 3.—An unmarried domestic servant, aged 20, was admitted to the London Hospital on May 13th, 1924. Two days previously she had been seized with acute colicky pain in the lower abdomen. She had had considerable nausea but had not vomited. Her bowels had been open twice since the onset of the pain; she had had no frequency or pain on micturition and denied any vaginal discharge. Her periods had been regular, the last finishing 21 days before. On *examination:* temperature 99° F., pulse-rate 108, and respiration-rate 26. Tongue furred. Abdomen slightly distended and tender to palpation over the whole hypogastrium, with rigidity of muscles on right side. Cutaneous hyperæsthesia absent. No sign of vaginal discharge. Per rectum, great tenderness and a soft mass high up on the right side. At *operation* a freely movable, apparently normal appendix was removed. The right ovary, which was low down in the pelvis, contained a ruptured hæmorrhagic cyst about the size of a walnut, and there was some blood-clot in the pouch of Douglas. The cyst was dealt with as in the last two cases, and the clot swabbed out of the pelvis. The patient made a good recovery and six weeks after discharge had no complaints. The *pathological report* was: "(1) Slight acute inflammation of peritoneum of appendix. (2) Blood-clot, red and grey thrombus, and layer of lutein cells from cyst of right ovary."

CASE 4.—The patient was a married woman, aged 25, who had had no children or miscarriages. On admission to the London Hospital on May 14th, 1924, she complained of having had sharp intermittent pains in the right side of the abdomen for four days, with nausea but no vomiting. A few hours previously it had increased in severity. Her bowels had been open daily and she had had no disturbance of micturition. Her periods had been regular and normal, the last finishing 11 days previously. She had had a mild attack of somewhat similar pain lasting for two or three days about five weeks before. On *examination:* temperature 99·6° F., pulse-rate 94, and respiration-rate 26. Tongue moist and furred. Some tenderness in right iliac fossa, but no rigidity and no cutaneous hyperæsthesia. Per rectum, slight but definite tenderness on right side. Nil abnormal in urine. At *operation* the appendix was freely movable and normal in appearance. The right ovary contained a hæmorrhagic cyst the size of a hen's egg, which had apparently just ruptured, with escape of dark altered blood. A mass of blood-clot was squeezed out and the cavity examined. There was no definite lining membrane and no fresh hæmorrhage. The cyst was obliterated with a running catgut suture, preserving the ovary. The left ovary was normal in appearance. The appendix was removed and recovery was uninterrupted. Four weeks after leaving hospital on May 31st she complained of a purulent vaginal discharge and also that her periods had not returned since the operation. She was given appropriate treatment for the discharge and advised to discontinue the use of contraceptive pessaries. A month later the discharge had almost gone and her periods had returned. She has since become pregnant. The *pathological report* was: "(1) Appendix—no histological abnormality. (2) Blood-clot and a minute fragment of lutein tissue."

CASE 5.—A shop assistant, aged 24, unmarried, was admitted to the London Hospital on June 1st, 1924. For three days she had been away from work, complaining of abdominal pains and nausea. On the morning of admission the pain had become more severe and localised to the right side, and she had vomited once. Her bowels had been open daily and she had had no disturbance of micturition. Her last menstrual period had begun on May 13th, and had been perfectly normal. On *examination:* in considerable distress; temperature 99·2° F., pulse-rate 112, and respiration-rate 24. Dirty furred tongue. Tenderness in right iliac fossa on palpation; no rigidity or cutaneous hyperæsthesia. Per rectum, tenderness on both sides of the pelvis; no mass felt. No vaginal discharge; urine free from abnormal constituents. At *operation* the appendix was movable and appeared normal, but the right ovary was the size of a golf ball, much thickened and scarred, and showed an unruptured cyst about half an inch in diameter projecting from the outer pole. This was incised and found to contain clear fluid and some blood-clot. The contents were evacuated and the cavity obliterated. The left ovary was normal, and the wound was closed after removal of the appendix. The patient had a slight rise of temperature on the second day after operation; otherwise she made an uninterrupted recovery and was discharged on the fifteenth day. She was seen again six weeks later, when she was free from symptoms. The *pathological report was:* "(1) Appendix: no histological abnormality. (2) Blood-clot and fragment of lutein tissue."

CASE 6.—The patient was a woman, aged 23, who had been married one year without pregnancy. She was admitted to the Southend Victoria Hospital under my care on Jan. 12th, 1928, complaining of six days' intermittent pain in the right side of the abdomen. It had been sharp and sudden in onset and had subsided gradually with exacerbations at intervals of a few hours—in no instance of greater severity than the first attack. The pain had been followed by nausea and she had vomited once. She also complained of two days' dysuria and frequency of micturition, and of dyspareunia. She had no appetite and was constipated. Her periods had always been regular, the last finishing 11 days before the onset of the pain. On *examination:* temperature 99° F., pulse-rate 88, and respiration-rate 26. Tongue moist and slightly furred. Abdomen tender with slight resistance to pressure in the lower right quadrant. No cutaneous hyperæsthesia. Per vaginam, tender mass above the right vaginal fornix, separate from the uterus, which was freely movable and did not seem to be enlarged. No vaginal discharge, and nothing abnormal in urine. As *expectant treatment* she was put to bed in Fowler's position and allowed nothing but water by the mouth. Some 18 hours later her pulse-rate had risen to 114, though her pain had somewhat subsided. The diagnosis of acute appendicitis was made and I decided to explore her abdomen without delay. At operation the appendix showed no abnormality. The right ovary contained a hæmorrhagic cyst the size of a large walnut, which had recently ruptured into the abdominal cavity; fresh arterial hæmorrhage—probably induced by the manipulation necessary to bring the ovary up to the abdominal wound—appeared at the point of rupture. The left ovary was normal. The right ovary and appendix were removed; about 2 oz. of recent blood-clot was swabbed out of the pelvis and the abdomen closed without drainage. This patient made an uninterrupted recovery and was sent home on the fourteenth day after operation. The *pathological report* was: "(1) Appendix: no histological abnormality. (2) The section shows a fibrous ovary with remains of hæmorrhage into a corpus luteum."

The last case of the series is of interest in that it was the only instance of this condition seen at the London Hospital in the year ending May 31st, 1925, whereas the first four cases all occurred within less than three months. I did not see this patient on admission, but I was present at the operation.

CASE 7.—The patient was an unmarried domestic servant, aged 22, and was admitted on April 6th, 1925. For ten days she had complained of abdominal pain, which had been constant, though not at first severe. Three days before admission its severity had increased, and she vomited five times during the night of April 4th—i.e., 36 to 24 hours before admission—and again once 12 hours previously. Nausea had been constant some time before the vomiting began. Her bowels had been open daily since the onset of the attack; two days before admission she had been given an enema. She had had no disturbance of micturition, and her periods had been regular, the last finishing one week before—i.e., three days after the onset of the abdominal pain. On *examination* she seemed in good health and was not distressed. Temperature, 99° F.; pulse-rate, 90; respiration-rate, 24. Tongue moist with patchy white fur. Localised tenderness in right iliac fossa with slight rigidity of abdominal wall in same situation. Cutaneous hyperæsthesia above and below Poupart's ligament on right side. No mass discoverable by palpation. Per rectum, she appeared very tender; this was discounted as being due to nervousness. Urine not examined. At *operation* the appendix seemed to be normal and was removed. The right ovary contained a cyst the size of a golf ball, which burst on delivery, its contents being apparently blood-clot. The right ovary was removed, the tube being left intact. The left ovary was normal. The patient made an uninterrupted recovery, and the *pathological report* was: "(1) Slight acute appendicitis. (2) Hæmorrhagic lutein cyst of right ovary."

Diagnosis before Operation.

In all these cases the symptoms and physical signs were strongly suggestive of acute appendicitis. In three of them the pain was certainly described as

being right-sided only, and not as being generalised or epigastric at its onset; but its severity, the suddenness of its onset, and the absence of symptoms referred to the urinary system, coupled with the physical signs, pointed strongly to the appendix as the seat of the condition. Two of the patients had no rise of temperature, and this is admittedly unusual in acute appendicitis; but here again the absence of a history of amenorrhœa or even the imminence of the next regular period, as well as the absence in each case of any suggestion of uterine hæmorrhage, rather discounted the suggestion of ectopic pregnancy. In one case, the sixth of the series, the possibility of right salpingitis was suggested, but the balance of evidence was distinctly against it.

The common features of these seven cases were pain of sudden onset, tenderness to pressure in the right iliac fossa, and a raised pulse-rate; these symptoms and signs must inevitably suggest acute appendicitis. In five of them the abdomen was opened and the appendix searched for at once; of the remainder, expectant treatment was tried in Case 2 for 36 hours and in Case 6 for 18 hours. In both of them a rising pulse-rate made it clear that further delay was inadvisable if the diagnosis was correct. It is reasonable to suppose that in Case 2, had a confident diagnosis of the true condition been possible before operation, the hæmorrhage and peritoneal irritation would have subsided with complete rest, as the cyst was found at operation to be unruptured with no free arterial hæmorrhage in its cavity. The pathological process had, in fact, stopped, and resolution was apparently taking place. However, as it has been pointed out, a diagnosis, or at any rate a confident diagnosis, of the true condition cannot be made; such symptoms and signs as these cases presented will always point strongly to that common condition, acute inflammation of the appendix.

Brakeley and Farr [3] consider that operative treatment is not indicated in ovarian hæmorrhage of this type, except in rare instances. They quote two cases in which a diagnosis of the condition was made without operation, and which cleared up completely with rest and medical treatment. (One patient had had her appendix removed previously.) They go on to say, however, that—

> "the differential diagnosis is extremely difficult. We found no pathognomonic sign or symptom of hæmorrhage into a Graafian follicle. In case of doubt, observation for a few hours is justifiable, but as there is grave danger from delay in appendicitis, and very little danger from an exploratory operation, it is wiser to operate if the symptoms do not subside."

Moore [4] is impressed with the fact that in none of the cases reported, so far as he could ascertain, was the correct diagnosis made before operation. He gives a summary of 14 cases, including two of his own; ten were diagnosed as acute appendicitis, and four as ruptured ectopic gestation. Eick's [5] and Odermatt's [6] cases were also diagnosed as acute appendicitis before operation.

Furthermore, though the condition might clear up with rest if caught at once in the early stages, four of those I have described had reached the stage of rupture and intraperitoneal hæmorrhage; and Crousse,[7] Goldberger,[8] and Strauss [9] have each reported cases in which the hæmorrhage approached the degree seen in ruptured ectopic pregnancies of the fulminating type, and the patients were only saved from death by immediate operation. Penny's [10] case proves that hæmorrhage of this type can indeed end fatally; his patient died in nine hours, and at necropsy the abdominal cavity was found to be full of blood from a ruptured Graafian follicle.

Thus it will be seen that the condition under review produces two clinical types of case; the first comprising the milder degrees, giving signs of peritoneal irritation and indistinguishable from acute appendicitis; the second, fulminating, presenting the picture of severe intraperitoneal hæmorrhage. Both call for operative treatment.

Course of the Hæmorrhage.

The pathological process underlying this form of ovarian hæmorrhage seems to be an exaggeration of the normal physiological mechanism of rupture of the Graafian follicle, which occurs some time during each menstrual cycle in a sexually active woman. It is believed that a minute hæmorrhage normally takes place into the cavity of the follicle immediately after discharge of the ovum, and that the tiny clot is absorbed by the cells of the membrana granulosa during the process of development into the lutein cells of the ripening corpus luteum. It is suggested that in the cases under discussion this hæmorrhage for some reason assumes pathological proportions, distending the tunica albuginea of the ovary, thereby producing the pain and physical signs, and finally rupturing the hæmatoma so formed at or about the stigma of the original Graafian follicle. This view is borne out by the uniformity of the pathological findings in the seven cases under review; blood-clot and lutein cells were in every case found in the material removed from the ovary.

Shaw [11] believes that ovulation—i.e., extrusion of the ovum—takes place between the thirteenth and sixteenth days of the menstrual cycle. If the above view of the pathology of these cases is correct, then the onset of the symptoms might be expected to bear some similar constant relation to the first day of the preceding period. Unfortunately, exact notes on this point were not taken in my series of cases. Except in one of them, the symptoms seem to have started somewhere about midway between the periods.

What, then, is the factor which causes the hæmorrhage into the cavity of the follicle to become excessive? Schumann [12] believes that it is generally disease of the ovarian vessels. Primrose [13] reported two cases in which trauma played a part; in one of them a normal Graafian follicle ruptured during a sudden strain while lifting a heavy box, whilst the other was attributed to violent vomiting. Novak [2] quotes von Beust as having found nine cases out of 36 in which trauma was regarded as having started the hæmorrhage. In Crousse's [7] case rupture occurred during a bimanual examination, but possibly the cyst was already hæmorrhagic. H. W. Wilson [1] pointed out that these cases occur essentially in young women whose ovaries are at the height of their functional activity and who are often in a state of relatively high sexual excitement. In my series of cases nothing suggests a common ætiological factor. There is certainly no history of trauma in any of them.

Cases at the London Hospital.

An examination of the records of the London Hospital shows that during the nine years, 1915–23, nine cases of hæmorrhagic lutein cyst of the ovary were admitted to the *surgical* wards. All of them were explored at operation, and in each the right ovary was involved. From the fact that these patients were admitted on the surgical side it is reasonable to suppose that the pre-operative diagnosis was always acute appendicitis, the truth being learnt only after exploration of the abdomen.

It is remarkable that before 1924 not more than two cases occurred in any one year, while in that year five cases occurred within less than three months. The average for the period 1915–24 works out at 1·4 cases admitted on the surgical side per year. The corresponding figure for acute appendicitis during the same period is 582 per year.

During the same decennium ten cases of hæmorrhagic lutein cyst were admitted to the *gynæcological* wards of the London Hospital, the diagnosis being established by laparotomy. In eight of them the left ovary was involved, in two the right. This suggests that the two ovaries are equally affected, and indicates that when the condition occurs on the left side the question of acute appendicitis does not arise.

I am indebted to Sir Hugh Rigby, to Mr. A. J. Walton, and to Mr. Hugh Lett for permission to

publish six of these cases; and also to Prof. H. M. Turnbull, Director of the Pathological Institute of the London Hospital, for permission to make use of the findings of his department.

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A REPORT ON TWO CASES OF TYPHUS OF AN ANOMALOUS TYPE.

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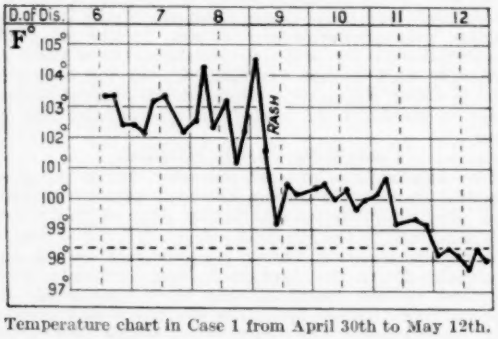
WE are reporting the two cases detailed below, as an account of this illness seems to be urgently called for in the interests of public health, and in view of the fact that an account such as this may help others should they meet equally puzzling cases.

The man's illness was the first to come under notice, and after a rash appeared it was thought necessary to bring all possible laboratory tests to bear. As these came back one after the other in favour of typhus, it became necessary to notify the disease. Even so, the case presented a startling isolation and an absence of any known ætiology, but

FIG. 1.



Temperature chart in Case 1 from April 30th to May 12th.

Dr. D. L. Thomas, the medical officer of health, has, we understand, discovered some history of dealing in, and storing of, second-hand clothes. This, however, appears to have ceased two years ago. The man's wife was subsequently brought into hospital with an illness presenting the same clinical features as the husband's except that there was no rash, but two tests having come back in favour of typhus, it became necessary to notify her and send her away to the M.A.B. Hospital.

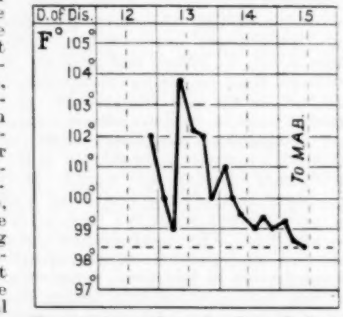
CASE 1.—A. G., aged 48, tailor's machinist, admitted to hospital April 30th, 1928, with a diagnosis of influenza.

History.—Ill five days, with pains all over, but especially complaining of headache and sleeplessness. Worse the last two days, when he was forced to go to bed. In previous good health and no infectious disease at home.

Condition on Admission.—Moderately well nourished. Temp. 103·4° F.; pulse 120. No respiratory distress; tongue coated brown and dry. Pharynx: injected and glazed appearance. Skin: no visible eruption. Lymph glands: no enlargement. Central nervous system: pupils equal and react L and A; no external ocular palsies; cranial nerves normal; all reflexes +; generalised hyperæsthesia; slight rigidity of limbs, but no paralysis. Mental condition: mild delirium; resistive to attention.

Subsequent History.—On the following day the delirium was the most prominent sign, the patient becoming almost maniacal, necessitating his transfer to an observation ward. There was impaired note base of left lung. This state was maintained till May 3rd (ninth day of disease), when the temperature fell to 99·2°. The delirium gave way to a state of profound apathy, the patient lying quite inert, talking being a great effort; it was necessary to catheterise him. He complained of intense frontal headache. At this stage (ninth day) a faint petechial eruption was noticed, confined to the trunk and proximal parts of the limbs, the individual lesions being about one-sixteenth of an inch in diameter. The eruption had faded by May 13th, having never involved the face, forearms, or legs. The pyrexia subsided by May 6th, the twelfth day of disease (see Fig. 1). But there was no improvement till the 15th, when the patient commenced to take an interest in his surroundings, asking for food, and helping himself. His frontal headache did not abate, and on the 21st he complained of seeing double. He had diplopia for distant objects only. There was slight bilateral ptosis and weakness of both external recti. Since then the headache and diplopia have gradually subsided. He is up in the afternoons, his general condition is much improved, the only physical signs present being a monotonous voice and slight immobility of the face.

FIG. 2.



Temperature chart in Case 2 from May 30th to June 2nd, when the patient was removed to a hospital of the Metropolitan Asylums Board.

Urine: Urates, + +; otherwise no abnormal constituents. Ehrlich's diazo-reaction −ve. May 15th: Widal, −ve 1/10, 1/25, 1/50, and 1/100; −ve paratyphoid. Weil-Felix, +ve up to 1/1000 dilution. May 9th: Blood, Hb., 88 per cent.; red blood cells, 4,700,000; white blood cells, 13,000. Differential: Neutrophils, 89 per cent.; lymphocytes, 11 per cent.; hyalines, eosinophiles, basophiles, nil. May 10th: Cerebro-spinal fluid, under pressure + +; clear. Reaction, faintly alkaline. Albumin, 0·06 per cent. Globulin, + +. Fehling, normal reduction. Lymphocytes, slight excess. W.R., +ve (strong).

CASE 2.—K. G., aged 51, wife of A. G., admitted May 30th, 1928.

History.—Confined to bed five days, but not feeling well for seven days before that, complaining of intense headache, especially at the back of the head, and stiffness of the neck, and feeling very hot. Also complained of a recurrence of a cough while she was ill, and that it hurt her to cough.

The *condition on admission* was almost identical with that of the husband. Temp., 103·6° F., very restless and delirious; tongue dry, brown, and cracked. Spitting up very tenacious sputum. There was no rash, and it was decided to await the result of the Wassermann and Weil-Felix tests before notifying this case. However, these both came back positive, and the case was transferred to the M.A.B. on June 2nd. The temperature had then fallen to normal by lysis (see Fig. 2), but the delirium persisted.

The diagnosis of these two cases presented very considerable difficulties, and we should like to acknowledge the help we received from the consulting staff of this hospital, from the medical officer of health, and from the Ministry of Health. The disease which was most likely to cause confusion was encephalitis lethargica, with the pyrexia, headache, and diplopia; but the combination of a delirium, with a subsequent state of complete apathy, coupled with a petechial eruption, positive Wassermann and Weil-Felix reactions, forced on us a diagnosis of typhus. On the other hand, a temperature falling by lysis, absence of rash in the woman, and absence of body vermin in both cases, are rather strong points against this disease.

Clinical and Laboratory Notes.

A FURTHER NOTE ON THE RECORDED INCREASE OF CANCER.

By D. F. Shearer, M.B. Oxf., F.R.C.S. Eng.

It was suggested in an annotation on the Apparent Increase of Cancer in THE LANCET of Jan. 28th last that, for purposes of comparison, "a better idea of the general trend of the death-rate" of cancer would be given by taking a group of five years instead of a single year. Acting on that suggestion, the figures for the sites given for the years 1901–05 in the Annual Report for 1925 were standardised on the basis of the population of 1925 and divided into two groups. The one (A) containing the sites: intestines, larynx, lung, pancreas, kidney, bladder, and prostate, was selected as representing those sites in which the greatest increase in diagnostic facilities had occurred during the period; and the other group (B) contained the remainder. Two special groups were also worked out, the buccal group in the male and the sex organs in the female. In the group 1901–05, to the sites mouth, tongue, jaw, and lip was added the site "lymphatic glands of the neck," as practically in all cases cancer of these glands is secondary to one of the primary sites in the buccal cavity group. It is not included in 1925, as it is not stated separately in the list of sites given in that year. This is probably of no importance, as the number of deaths attributed to that site had fallen 70 per cent. by 1912; and more accurate information as to site than was provided by the original certificate was obtained by the Registrar-General in 1925 in over 1000 cases. Presumably, then, all deaths certified as due to cancer of the lymphatic glands of the neck in 1925 were corrected to give the primary site. The figures were worked out for the 10-year age-groups given in the 1925 report, and collected into two groups "35–65 years" and "over 65 years" to save space.

Table showing the standardised figures and rates of increase or decrease in deaths from cancer in the various groupings in 1901–05 and in 1925, and in deaths from "old age" for males, females, and persons.

Males.

Sites.	35–65 years.			Over 65 years.		
	1901–05.	1925.	% inc. or dec.	1901–05.	1925.	% inc. or dec.
All	10,082	12,241	+ 21	7,213	11,155	+ 54
(A)	1,642	3,698	+125	1,298	3,542	+172
(B)	8,440	8,543	+ 1	5,915	7,613	+ 28
Buccal	1,625	1,442	− 10	1,023	1,184	+ 15
"Old age"	..	..	..	19,320	10,063	− 48
Females.						
All	15,981	14,953	− 4	9,924	12,372	+ 24
(A)	1,830	2,281	+ 25	1,532	2,801	+ 82
(B)	4,151	12,672	− 10	8,392	9,571	+ 14
Sex organs	7,390	7,007	− 5	3,056	3,528	+ 12
"Old age"	..	..	..	28,708	14,980	− 48
Persons.						
All	26,063	27,194	+ 4	17,137	23,527	+ 37
(A)	3,472	5,979	+ 72	2,830	6,343	+121
(B)	22,591	21,415	− 5	14,307	17,184	+ 20
"Old age"	..	..	..	48,028	25,043	− 48

inc. = increase; dec. = decrease.

The figures show that both in males and females, up to the age of 65, the whole of the increase is attributable to the small group (A): that over that age there is a second factor at work which affects both (A) and (B): and that after allowing for an increase in group (A) over the age of 65 at a similar rate to that obtaining below 65, there is an increase in the males of 2320, and in the females of 2065, against reductions in the deaths assigned to "old age" of 9257 and 13,728 respectively. These figures correspond to some extent with the proportions which deaths from cancer at this age-group bears to deaths from all causes. It is not to be expected that the correspondence would be exact, but it is sufficiently close to be extremely suggestive of a near relationship between increasing cancer and decreasing "old age" deaths. It is curious to note that the two groups, buccal in the male and sex organs in the female, which are undeniably "accessible" and have not been subjected to any increase of diagnostic facilities, show no increase whatever. The figures of the former are 2648 and 2626, and of the latter 10,440 and 10,535.

There is, however, another factor in the apparent increase of cancer to which, as far as I know, attention has not been directed, and it may conveniently be stated in the form of a logical syllogism.

Death from some cause is inevitable.
Death from causes other than cancer is not inevitable and can be prevented, and the rate is diminishing.
Therefore death from cancer is inevitable and its rate must be increasing.

It is quite obvious that if the chance of subsequent death from cancer at any given age is a, and of subsequent death from all other causes is b, then, since $a+b$ must equal unity, a must increase as b diminishes. But this does not mean that the chance of death from cancer at any given age is increasing; there is sound reason to believe that cancer is not a pathological entity, but a physiological process with a more or less fixed rate for each age; it merely means that the individual has a greater chance than formerly of surviving to an age where the death-rate from cancer is higher. It is impossible at present to estimate how far this factor is operating in the recorded increase of cancer in later years, but there can be no doubt whatever that its effect will be seen in the future.

It may seem pessimistic to assert that the fruition of all our efforts for the preservation of health and the prevention and cure of disease and accident can only lead to universal death by cancer, but it must be remembered that in the earlier years of life cancer can be eradicated and that in the very old it frequently, if not invariably, assumes an almost benignant type which quite clearly often in the past has been, and not seldom in the present is, mistaken for senile decay.

A CASE OF PERICARDIAL KNOCK ASSOCIATED WITH SPONTANEOUS PNEUMOTHORAX.

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The term "pericardial knock" was applied during the war to a sharp, rapping sound which was sometimes to be heard over the præcordium in cases of gunshot wounds of the chest, and was often sufficiently loud to be audible at a distance from the patient.

The first to draw attention to the phenomenon were Rees and Hughes,[1] who quoted nine cases from their experience. Shortly afterwards Maynard Smith [2] described its occurrence in some of his cases on the Western front, and Henley Munden [3] recorded a case in a boy who was shot in the chest while rabbiting. Hull [4] mentions it in his book on war surgery, and there is also a brief account of the condition in Norris and Landis's text-book on diseases of the chest.

Though the sound varies in intensity in different cases, and persists for a variable period after the original injury, all the cases recorded present certain

[1] Rees, W. A., and Hughes, G. S.: THE LANCET, 1918, i., 55.
[2] Smith, S. Maynard: Brit. Med. Jour., 1918, i., 78.
[3] Munden, W. P. H.: Brit. Med. Jour., 1918, i., 175.
[4] Hull, A. J.: Surgery in War, 2nd edit., p. 386.

features in common. In character the sound is a sharp, hollow knock; it is always systolic in time and usually varies with respiration, being loudest during inspiration, though the case described by Henley Munden did not show this variation. Finally, it is always associated with a wound of the left side of the chest. A number of suggestions have been put forward to account for the sound. Rees and Hughes thought it possibly might be caused by vibrations imparted by the cardiac impulses to a column of air enclosed in a bronchus by a missile or blood-clot. Maynard Smith suggested that it was due to air which had found its way into the interstitial tissues of the lung or mediastinum. In civilian practice the condition appears to be somewhat of a rarity, and it has not been possible to find any record of its occurrence apart from gunshot wounds of the chest. The following case therefore seems worth recording:—

History.

A commercial traveller, aged 31, was first seen on Feb. 1st, 1928. He complained of slight pain in the region of the second left intercostal space and of a loud tapping sound in his chest. He stated that six days previously, while sitting in a tramcar he had experienced a sudden, sharp pain in the left upper part of his chest and had felt faint and breathless for a moment. He got out of the tram, and after obtaining a little brandy from a friend who lived near by, he returned home and went to bed as the pain persisted, though he felt quite well in other respects. For the next two days he remained in bed and the pain rapidly passed off except for a slight tenderness. On the third day he decided to get up, but on putting his feet to the ground he was horrified to hear a loud rapping sound in his chest which was also plainly audible to his relatives. Accordingly, he returned to bed and the sound ceased when he lay down. Next day he made another attempt, and though the sound returned as before as soon as he stood up, it caused him no inconvenience and he remained up and about and was able to walk round for the consultation two days later without experiencing any ill-effects whatever.

Previously he had been healthy, though he recognised that he was a nervous man. At no time had he suffered from pleurisy or cough, nor so far as he knew had he lost weight. There was no history of tuberculosis in the family.

Physical Signs.

On examination the patient was thin, pale, and nervous, with a spasmodic tic of the right side of the face. Pulse 116 per minute, regular. Temperature normal. As he sat giving the history of his illness at a distance of some 5 feet a hollow knocking sound could easily be heard coming from the patient's chest. Its point of maximum intensity was found to be situated over the fourth left costal cartilage, and a sharp tap corresponding to the sound was felt on palpation over the sternum. In character the sound was very similar to that heard over the brachial artery when taking a blood pressure at the point when the diastolic pressure is approached, but was, of course, very much louder. It was mid-systolic in time, coming at the end of the first sound and separated from the second sound by a short but distinct interval. It varied both with posture and with respiration. In the prone position it disappeared entirely; on sitting up it became clearly audible towards the end of expiration, but grew fainter and finally ceased as the lungs expanded. When the patient stood up the sound was at its loudest, rising to a maximum at the end of expiration and diminishing with inspiration. A deep inspiration could stop it entirely, even in the upright position, but ordinary quiet breathing did not do so. In other respects the heart sounds were perfectly normal, and the blood pressure was 145 systolic and 90 diastolic.

There was slight tenderness on pressure over the second left interspace in the midclavicular line, and the left side of the chest presented the usual signs of a pneumothorax with slight displacement of the heart to the right, so that the right margin of cardiac dullness was ½ inch to the right of the right sternal border, and the apex only 3 inches from the mid-line. The coin sound could not be elicited, no succussion splash was heard, nor was a metallic quality added to the pericardial knock which was audible all over the chest.

A radiographic examination on the fluorescent screen showed the lung to be separated from the chest wall by 1 inch in the lateral plane, and there was also air surrounding the apex and base and lying between the upper half of the lung and mediastinum as far down as the reflexion of the pleura at the hilum. The whole lung, therefore, in a partially collapsed condition hung loose in the thorax suspended from the hilum. It was kept in constant flicking movement by the beating of the heart so that its free lower margin continually agitated the surface of a small quantity of fluid that lay in the costo-phrenic angle. Owing to this constant movement it was not possible to obtain a sharply defined radiogram of the outline of the lung.

During the course of the next fortnight the knock became fainter and less frequent, finally to disappear three weeks after the onset of the pneumothorax. At the end of this period I again examined him and aspirated half a pint of slightly turbid, straw-coloured fluid from the left base. It contained numerous leucocytes and gave the rather unusual differential count of: eosinophils, 95 per cent.; lymphocytes, 2 per cent.; endothelial cells, 2 per cent.; neutrophils, 1 per cent. No tubercle bacilli or hooklets were found and the culture was sterile.

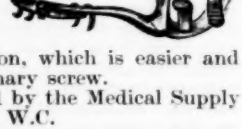
Six weeks after the onset of the illness there were no abnormal physical signs in the chest except for slightly diminished movement at the left base. A radiogram taken at this time showed a slight excess of fibrosis with a few scattered small foci of calcification spreading out from both hila, particularly the left. No signs remained of the pneumothorax or effusion. Treatment throughout was based on the assumption that the underlying cause was a ruptured tuberculous focus, and the patient improved in general health and gained weight during the time he was under observation.

Since there was no trauma in this case it is unlikely either that air was present in the interstitial tissues of the lung or mediastinum or that it was locked off in an occluded bronchus. Bearing in mind the character of the sound, the fact that it was precisely systolic in time, and that its point of maximum intensity was directly over the root of the left lung, it would appear possible that it is analagous to the sounds heard when estimating the blood pressure by auscultation and that it arises in the left pulmonary artery. Partial obstruction of this artery at the hilum by tension or distortion caused by displacement of the lung appears not unlikely, and, as the position of the lung would vary with the posture of the patient and with the respiration this would also account for the variations in the sound observed in this case. But if this is the right explanation of the production of the sound it is curious that it is not more often observed.

New Inventions.

MODIFIED FORCEPS AND RETRACTOR.

I SHOULD like to call attention to two instruments which have recently been modified by me, and which have been appreciated by several leading surgeons: (1) Tonsil Vulsellum Forceps (Fig. 1), adapted from Tilley's instrument. The chief difference is, that while the jaws have a similar curve they grasp the tonsil longitudinally instead of horizontally, also the spring catch has been replaced by the ordinary "cross over" shanks, which are fitted with a ratchet at the handles, by means of which a good grip is retained throughout the operation. The instrument has been considerably lengthened, being 9½ in. as against the 8 in. of Tilley's. The bows of the forceps are so made that a snare can easily be applied. (2) Mastoid Retractor (Fig. 2). A modification of Wagener's, giving a wide field, the shanks being bent to allow of this. The base of the instrument is curved so as to lie well back out of the field of operation. It is opened and closed by a ratchet action, which is easier and quicker in use than the ordinary screw.



These instruments are sold by the Medical Supply Association, Gray's Inn-road, W.C.

G. W. MOREY, M.B. Adel.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a meeting of this Section held on June 6th, Mr. WARREN LOW, the President, took the chair, and a paper on

HARE-LIP

was read by Dr. VICTOR VEAU (Paris). He demonstrated a large series of lantern slides, setting out the principles upon which his operations for the deformity were done. He had been interested in the condition, he said, for 30 years, during which time he had performed more than 1000 operations for it, and also had minutely studied over a hundred cases which had been operated upon by others. He had made many mistakes, and when he did not secure the results aimed at he did his best to ascertain what was the reason. The causes of the malformation he did not expect to find.

Clinically hare-lip could be subdivided into four forms. The first was unilateral simple hare-lip, which constituted about 30 per cent. of the cases. The second, and most common, form was unilateral total hare-lip, accounting for about 40 per cent. of the total cases. The third and rarest form was bilateral simple hare-lip, these forming only about 5 per cent. Lastly, there was the bilateral total hare-lip, which were about 25 per cent. In unilateral simple hare-lip there were all the elements for reconstitution to form a quite normal lip on the inside edge of the cleft, but the muscles were lacking, and this was the deficiency that caused most of the trouble. After having tried a variety of incisions and forms of operation, he had come to the conclusion that the most important step was suture of the muscles, for it was this that imparted to the lip the thickness and protrusion which were so necessary for a good cosmetic result. Then the operator could direct his attention to the exact adaptation of the cutaneo-mucous lining. He used a very fine, straight needle threaded with silk, and to be sure of securing direct coaptation he used magnifying glasses in the form of spectacles. The suture was finished on the cutaneous side and on the mucous side. His object in making a flap was to secure that protrusion of the lips; every effort was made to constitute what was popularly termed "Cupid's bow."

Dr. Veau's photographs showed that a month after operation the line of incision was still plainly evident, but six months afterwards, in many of the examples, neither scar nor line could be detected, the reason being, he said, that he did not put the stitches needlessly deep. A scar resulted when mucous membrane was included in the suture. This was the mistake most commonly made by surgeons who did not exercise sufficient care in the operation for hare-lip. In some of the cases after operation an island of mucous membrane was to be seen in the skin; it always remained bright red, never became transformed into skin, and to a woman was a disfigurement. Another error was to leave an irregular muco-cutaneous line. Great care must be taken over the suture of the muscles, to give that protrusion and correct line which would make the lips approximate to the normal. Many of the errors made were capable of being remedied by further operation if parents, and the patients themselves, would permit it.

In unilateral total hare-lip of severe degree, with a very wide cleft, the lip could not be reconstituted by operation. In older children the first step which was often necessary was for the dentist to straighten the incisor teeth. In one variety of unilateral total hare-lip there was no cleft palate; these, he considered, constituted about 12 per cent. of all cases, and they were very difficult to treat. In dealing with unilateral total hare-lip his object was to avoid two bad results. One was retraction of the upper lip the other was flattening of the nostril. When the lower lip was more prominent than the upper, the result was unsightly. For operations on hare-lip the surgeon should have a mentality different from that required for hysterectomy or amputation of a limb, because of the minuteness and delicacy of the manipulations of tissue required. He turned up a mucous flap from the septum; it was easily separated; this flap was very tough and did not break. It was separated as far as the anterior part of the tubercle. The difficulty was in the ridge. He cut the frænum of the upper lip, and completely separated the palatine mucous membrane, preserving the posterior palatine artery. He first reconstituted the floor of the nose, as it was then easier to reconstitute the palate afterwards. The horizontal flap must be the threshold of the nostril.

Difficulties of Operation.

Mr. C. H. FAGGE said he was unable to bring forward anything like such a wealth of material as Dr. Veau had done; his purpose was, rather, to set forth a few of the difficulties of operation in these cases as they had presented themselves to him. Hare-lip, he considered, could be divided into three degrees: (1) partial; (2) unilateral; (3) bilateral. It was part of his thesis that in every case the tissues might be defective. Some surgeons thought the tissues were fully developed and were simply separated. Even when the first degree of hare-lip was present there was, in his experience, an abnormality of the ala, which must be dealt with. He had always found that in those cases incision had to be carried up into the nose, so as to bring the ala inwards.

The first difficulty was to scale out the ala. This could be done by undercutting the cheek on the affected side. Provided the tissues of the cheek were separated from the maxilla far enough upwards, even to the outer canthus of the eye, the ala could be brought into its natural position. If that was done the naso-labial fold would be restored. The next difficulty was the formation of a normal nostril. In his experience, this demanded that something should be cut away, usually from the inner side of the cleft, so as to convert what was an abnormally wide nostril into one of ordinary size. On the other hand, it was possible to cut too much away and leave the child with too narrow a nostril instead of a very wide one. A very wide nostril caused difficulties in speech, because too much air came through it; if it was associated with a defect in the palate, it made the pronunciation of certain letters very difficult. In one case, which he described, the defective speech due to the nostril being very wide had necessitated a second operation, involving an extensive dissection of the cheek.

He had not found that restoration of the lip was, in itself, very hard; but there was one difficulty connected with the ala which he was at present unable to overcome—namely, its eversion. Even when brought into the normal position, the ala, in these children, was inclined to be everted, whereas the normal ala was inverted. He would like to know how other members of the Section had dealt with this difficulty. He had only been able to excise a portion of the cartilage on the outer side of the nose so as to turn it inwards, but had not had any great success. Another difficulty was that due to depression of the apex of the nostril; it was very difficult to bring it into a normal position. For some time he had given up cutting through the muco-cutaneous surface. He carried the incision three-quarters of the way through the lip, then turned back the cut flap and sutured it behind the tissues of the lip itself, so as to preserve a wide mucous surface behind, which would prevent adhesion of the lip to the alveolus. On the larger fragment there was always an area of mucous membrane carried upwards in the line of what should be the tubercle, and this must be carefully removed. In reconstituting the lower margin of the lip the chief difficulty was the formation of a good tubercle. The lip should have

no adhesion to the alveolus; it must be quite free, so that it would come forwards with each movement of the remainder of the face.

The complete and the bilateral cases presented no difficulties apart from those he had spoken of. Beyond the plastic portion of the operation, he had confined himself to the continuous suture through the deep structures, including the muscles on both sides, using a cutaneous suture of fine gut, and in most of his cases this lip operation had been done at the same time as that on the cleft palate—when the latter condition was present—usually at the age of about three months.

The Need for Secondary Operations.

Mr. T. POMFRET KILNER gave a description of the work of Mr. Harold Gillies and himself in this region of plastic surgery, largely in doing secondary operations in cases in which the first had not been satisfactory. He put forward a plea for simple primary reconstruction. However small the parts, each element of the lip had its separate and distinct layers, and these, especially the muscular layers, must be correctly approximated if proper balance of function was to result. In all plastic work the amount of raw surface must be reduced to a minimum, as raw surface meant scar tissue and subsequent contraction. He considered that no surgeon was justified in promising a perfect cosmetic result in these cases as a result of only one operation; his chief aim should be to give establishment of function, and for this reason all zig-zag procedures and flaps were to be condemned. One ought to concentrate on the nostril. Mr. Gillies and he never tried to equalise the sides of a cleft by elongating the shorter of the two elements; the longer of the two sides required shortening in order to give a good cosmetic result. In the operation no skin and very little mucous membrane was sacrificed. In unilateral cleft cases Mr. Gillies frequently turned over a much smaller flap of muco-periosteum from the stump of the alveolar process on the longer side. Mr. Kilner expressed his admiration of the work of Ritchie, of Minnesota, in this kind of surgery. Ritchie got very accurate muscle approximation, and made use of electrical stimulation to ascertain the upper and lower limits of each muscle concerned. In the practice of his colleague and himself, the stitches were removed in from three to five days, and they preferred to have a slight gaping of the wound. Great improvement of contour was found to result from the use of the epithelial inlay. In most of the cases which came for a second operation for readjustment of the lip the skin triangle had been incorporated too low down. In some patients a reduction of nose was called for, and some noses could only be dealt with adequately by fracturing and resetting certain bones. Dealing with the nasal septum often resulted in the solution of difficulties which had resisted all other measures.

SECTION OF OPHTHALMOLOGY.

AT a meeting of this Section held on June 8th Mr. ERNEST CLARKE, the President, took the chair, and a paper entitled

THE ANTIBACTERIAL BODY LYSOZYME

was read by Mr. FREDERICK RIDLEY.

Lysozyme, described by A. Fleming in 1922, was, he said, an enzyme which could destroy most of the organisms which were pathogenic for man and the lower animals. It was very widely distributed in nature, being found in all animal tissues and tissue fluids and in most of the secretions. In tears, polymorphonuclear leucocytes, nasal mucus, and the sputum of man it was present in very high concentration, therefore it was difficult to over-estimate its importance in protecting the individual against bacterial invasion. It was destroyed by temperatures above 75° C., it acted most rapidly at 60° C., and was very efficient at the temperature of the body. The enzyme was destroyed by free acid or alkali. It disappeared on intravenous or subcutaneous injection into an animal. Wolff regarded the fixation by fats as the probable natural means of storage of the enzyme in the body. It was present in turnips, white of egg, fowl, and fish. In man it was present in greatest concentration in leucocytes and cartilage, in tears, nasal mucus, and sputum. Mr. Ridley showed on the screen many plates to prove the strong bactericidal power of lysozyme. Fleming and Allinson had first showed that the blood serum contained lysozyme, and that in polymorphonuclear leucocytes it was present in very high concentration. The lysozyme content in tears was tested in more than 100 cases. In 16 cases of conjunctivitis, acute and chronic, the infected eye was found to have a reduction of lysozyme to about 30 to 60 per cent., the unaffected eye having a normal titre.

As to the general causes of lysozyme reduction, Finlay observed that in growing rats which were deprived of vitamin A kerato-malacia developed, and this was associated with a fall of lysozyme in the tears. He further made the valuable observation that the introduction of a drop of human tears into the conjunctival sac from time to time postponed that condition. In six cases of phlyctenular disease, and four of recent interstitial keratitis, the lysozyme titre of both eyes was less than 55 per cent. of the normal, even though only one eye was affected, probably because of the associated general ill-health. This perhaps accounted for both eyes being attacked. The reduction of lysozyme in the normal eye in keratitis was seen in several cases having positive signs of congenital syphilis, and was not observed in this case which showed no signs of congenital syphilis. Thus it was conceivable that the interstitial keratitis was due to a local infection other than by the spirochæte. Epiphora was associated with a fall in the lysozyme titre in every case observed, and when the epiphora ceased the lysozyme titre rose at once and there was clinical improvement in the condition of the eye. It was evident that the lacrymal gland must be partially paralysed by the instillation of atropine into the conjunctival sac.

Mr. Ridley said that a teaspoonful of the pure enzymic substance would confer its characteristic power over *Micrococcus lysodeicticus* upon 100 million gallons of normal saline. No antiseptic which had been tested compared with lysozyme in its power to inhibit the growth of this organism. As lysozyme was tolerated by the tissues, without appreciable reaction in concentrations as great as 40 times that in tears, the possibilities of its application for superficial and generalised infection were obvious. But the preparation of the enzyme in a pure state presented many difficulties, and demanded a laboratory equipped specially for the purpose.

Dr. ALEXANDER FLEMING commented on the fact that the substance was found in the parts of the body where it was wanted: in the nose, in the sputum, and the parts exposed to microbes in the air. He supported Mr. Ridley's contentions, and said that his observations on the clinical conditions observed carried the subject a distinct step forward. Wolff, in Holland, had isolated the substance from egg-white, and this opened up a means of obtaining it in a very concentrated form.

Mr. LESLIE PATON said this research started from an attempt to determine the action of herpetic viruses, and it was a matter of congratulation that Mr. Ridley had been induced to carry on this important work. He (Mr. Paton) had suggested some years ago that the absence of this substance might be one of the causes of neuropathic keratitis developing in some cases. He thought that after the Gasserian ganglion had been destroyed, or the nervous supply to the lacrymal gland had been ablated, the tears might not show the same concentration of this—as it then was—newly discovered substance. He hoped Mr. Ridley would also be able to inquire into the question of neuropathic keratitis and the herpetic viruses.

Colonel A. E. LISTER spoke of the irritant action of mercuric chloride as a preventive of dirty eyes in

connexion with cataract operations. It caused lacrymation, and he asked whether an effect of this was to reduce the lysozyme in the tears.

The PRESIDENT spoke highly of the value of this far-reaching paper; it had a direct practical application to many diseases, and he hoped the research would be continued.

Mr. RIDLEY, in reply, said it was impossible to get tears in any considerable amount from the eye in a condition in which the trigeminal nerve was damaged, but such secretion as did then exist in the eye contained some lysozyme. Dr. Fleming's researches on the direct action of antiseptics on lysozyme showed mercuric chloride to be very damaging. The increase of epiphora where epiphora was already present must be to the considerable detriment of the patient.

Reports of Cases.

Mr. NORMAN FLEMING showed a patient with a congenital anomaly simulating retinitis proliferans. A band of fibrous tissue stretched from the disc in the lower part of the fundus and seemed to be adherent to the fundus. There had been no injury at birth nor since.

Mr. J. D. M. CARDELL showed a case of arborescent cataract; and Mr. HUMPHREY NEAME one of iridocyclitis in a man aged 41. In the right eye was a deep striation, and in the left fine keratitis punctata.

Mr. MONTAGUE HINE related a case in which an artificial eye which had accidentally burst in situ was removed only with considerable difficulty. He said that spontaneous fracture of the cheaper kinds of glass eye was not uncommon, as they were not properly annealed in a warm sand bath after being blown, but it must be rare for the contact of the eye with the socket to be so close that some of the orbital tissue was drawn into the eye and strangulated, as in the present instance. This woman felt something explode in her face, but was unable to remove the artificial eye, and had increasing pain. The house surgeon at the ophthalmic hospital could not remove the eye either, and Mr. Hine was asked to see her. He gave her an anæsthetic and passed a bent probe up the back of the eye from below. This pushed aside the tissue which was blocking the hole at the back and let in the air, and the eye was released at once. The absent piece of glass was inside the eye, emphasising the fact that there was a negative pressure originally in all blown eyes. Mr. Hine also reported a case of neurofibromatosis, and showed histological slides from it. The eye was useless as an organ of vision, and both lid and eyeball were removed. The pathological report by Mr. Hervey Wyatt was read.

Mr. F. A. JULER reported a case of his own of the same nature, and Mr. TREACHER COLLINS described the findings in the cases of the kind he had examined.

Reviews and Notices of Books.

DEVELOPMENT OF THE HUMAN EYE.

By IDA C. MANN, M.B., B.S. Lond., F.R.C.S. Eng., Assistant Surgeon, Royal London Ophthalmic (Moorfields) Hospital. With a Foreword by Sir JOHN HERBERT PARSONS. London: Cambridge University Press. Published for the *British Journal of Ophthalmology*. 1928. Pp. 306. 36*s*.

"Miss Mann has been peculiarly fortunate in having access to what is probably the most comprehensive series of human embryos available in this country."

So says Sir John Parsons in a foreword to this work. She has used this material placed at her disposal by Prof. J. Ernest Frazer to the utmost advantage, and the result is a monograph which depicts the processes which constitute the development of the human eye with a wealth of detail and illustration which has never before been attempted. The fact that the directors of the *British Journal of Ophthalmology* have come forward to undertake its publication is in itself a high testimonial to the scientific importance of the work and to the value of the beautiful plates drawn by the author which enrich its pages.

The first two chapters are devoted to development from the first appearance of the embryonic plate until birth. The part played by surface ectoderm, neural ectoderm, and associated mesoderm are distinguished. Incidentally congenital malformations, microphthalmia, congenitally cystic eyeball, and coloboma of the retina are explained. The next chapter deals with the lens and certain congenital abnormalities in this organ which are shown to have relation to developmental defects. No defect can be congenital if it is situated outside the "fœtal nucleus." On the other hand, certain defects may arise in postnatal life and yet be developmental, since the lens continues to develop throughout life. In the next chapter, on the "Neural Ectoderm," the development of the different layers of the retina is described with a great wealth of illustration and detail. The problem of the origin of the vitreous is a very obscure one, on which the last word has not yet been said. A distinction is drawn between the "primary vitreous" derived from both lens-plate and optic vesicle and occupying the region of Cloquet's canal, and secondary or adult vitreous derived, in part at any rate, from the mesoderm, which enters the optic vesicle through the fœtal fissure. It is impossible to say of any given vitreous fibril how much of it is mesodermal and how much ectodermal. The suspensory ligament of the lens is derived from fibres which arise during the latter part of fœtal life and which have been called the tertiary vitreous. Under the heading of "Associated Mesoderm" are described the development and arrangement of the larger blood-vessels in the orbit which supply or drain the optic cup; also the development of the choroid, the development and retrogression of the fœtal intra-ocular blood system—i.e., the hyaloid artery, the tunica vasculosa lentis and their connexions—and the differentiation of the vessels of the iris and ciliary body; and, lastly, the development of the retinal arteries and veins. The ciliary muscle and region of the corneo-scleral junction (sections of which show well the "scleral spur" first described by Prof. Arthur Thomson) are illustrated by several drawings and diagrams. A full account is given of the development and subsequent atrophy of the pupillary membrane. The vessels atrophy as far back as the first anastomotic arcade where the arteries and veins are continuous; this so-called "circulus arteriosus iridis minor" is more correctly termed "circulus vasculosus iridis minor." It is of some interest to learn that in the sclerotic condensation that produces the sclera there is a lagging behind of the process in the posterior region. The author is too cautious to make anything more than a mere suggestion, but the inference cannot be avoided that this fact may have something to do with progressive myopia, for presumably, in certain stocks, the process of condensation is liable to be arrested too soon. The latter part of the book deals with the extrinsic ocular muscles, the lids and lacrymal apparatus, and the position of the eyes. In the final chapter the structure of the retina is compared to that of the cerebral cortex; up to the fourth month of development the analogy is close. Finally, Miss Mann supplies a synoptic comparison of optic with general development, and the volume ends with a large bibliography.

It is possible that the appeal of this work at present may be limited, but it will certainly be international. Apart from its value to embryologists and biologists, which is undoubted, it should prove also of use to those practising ophthalmologists in all countries who are interested in the scientific side of their specialty.

Those eager to apply to clinical problems the results of developmental studies will find in it a fruitful source of inspiration, and will be grateful for the originality and vigour with which Miss Mann has attacked the subject which she has made her own.

RECENT ADVANCES IN TROPICAL MEDICINE.

By Sir LEONARD ROGERS, C.I.E., M.D., B.S. Lond., F.R.C.P., F.R.C.S., F.R.S. London: J. and A. Churchill. 1928. With 12 illustrations. Pp. 398. 12*s.* 6*d.*

IN tropical medicine, detailed work, no doubt of varying degree of accuracy, comprehensiveness, and interest, is reported almost weekly, and in ever-increasing volume. Of recent years new journals devoted to tropical diseases and new medical journals in the tropics have appeared; and abstracts of work in every field of medicine from every part of the tropics are published periodically in the *Tropical Diseases Bulletin*. Sir Leonard Rogers declares this publication a boon to the great majority of medical men in the tropics, far away from libraries, and acknowledges his own indebtedness to its abstracts for much of the information here summarised. He supplies an interesting and detailed précis of much recent work on some 23 tropical diseases. In some of them his own contributions have advanced knowledge, to the relief of human suffering and the added power of man over his tropical environment. His selective judgment of what is recent and what is advance will therefore receive wide attention. Yet readable and helpful as is much of this book, it fails in some sections. For example, ankylostomiasis, a minor disease of the white man, ranks hardly below malaria as a major disease of the races native to the tropics. Some of the recent work on this subject is not correctly reported or interpreted. Though this book is dated 1928, there are no references in this section later than 1926; references to Clayton Lane's important researches on diagnosis do not go beyond 1923; and it is disappointing to find that the author does not condemn the stupid dictum that mild infestations with hookworm are of no importance, and that "healthy" carriers may be disregarded! For the rest, treatment in the selected group of diseases is adequately dealt with; the historical sections are very interesting, there are 12 illustrations, and a good index.

NERVE TRACTS OF THE BRAIN AND CORD.

Anatomy; Physiology; Applied Neurology. By WILLIAM KEILLER, F.R.C.S. Edin., Professor of Anatomy and Applied Anatomy, University of Texas. New York: Macmillan Company; London: Macmillan and Co. Pp. 456. £1 15*s.*

A FREQUENT criticism of the medical curriculum of to-day is to the effect that no regular courses of "applied" anatomy or physiology exist; that these subjects are taught without much hint of their further application and are to a considerable extent forgotten by the time the student commences clinical medicine or surgery. Prof. Keiller makes a brave attempt to minimise this defect by writing three books in one for the student of neurology, who is led on by easy gradations from pure neuroanatomy through neurophysiology to clinical neurology. Whether his effort conduces to readiness of absorption by the student of this rather rich and in any case somewhat indigestible pabulum may be open to question. The anatomical part consists largely of a description of the structures seen on cross-section at various levels through the cord and brain-stem, so that, while projection-systems are fully detailed, association-systems in comparison are rather ignored. This is to some extent compensated for in the sections on neurophysiology, afferent and efferent systems being discussed and the special senses examined. The largest division is concerned with applied neurology, and this includes sufficiently accurate accounts of the semiology of lesions involving the anatomophysiological mechanisms described in the other parts of the book. The long supplement devoted to the classification of nervous diseases on an anatomical basis tends to descend to the level of a mere catalogue, so much so that some of its paragraphs really convey little information worthy of the name. Thus: "Familial periodic paralysis, of the flaccid type, occurs in youth after severe nervous strain. It disappears spontaneously, but tends to recur." Other statements unfortunately require emendation—e.g., that a "chronic" form of progressive lenticular degeneration occurs "without cirrhosis of the liver." Yet taken as a whole there is much for the student to learn which is offered him here in clear-cut fashion and with a justifiable dogmatism on his teacher's part. The diagrammatic illustrations, mainly collected at the close, are mostly too sketchy; others are so crowded with anatomical data as to become confusing. Few, if any, of the clinical drawings and photographs seem to be original.

THE NORMAL CELLULAR STRUCTURE OF THE CEREBRAL CORTEX.

L'architecture cellulaire normale de l'écorce cérébrale. By Dr. CONSTANTIN V. ECONOMO, Professor of Psychiatry and Neurology in the University of Vienna. French edition by Dr. LUDO VAN BOGAERT, Agrégé at the Université Libre of Brussels. Paris: Masson et Cie. 1927. Pp. 183. Fr.80.

THIS beautifully printed atlas of the cerebral cortex on its cellular side is a derivative of the much larger volume entitled "Die Cytoarchitectonik der Grosshirnrinde (1925) of the same author, with the collaboration of Dr. Koskinas. Recent though the latter is, the book under review is not a mere abridgement, but contains some 46 new photographic reproductions of cortical fields, as well as fresh considerations derived from further anatomical study. In point of fact, it is really more desirable for the neurologist and neurological student than its predecessor; it furnishes them with a basis of exact information from which they may proceed to further research. Here is to be found a lucid description of structural variations in different parts of the cortex, of differences in thickness, cellular composition and arrangement, of comparisons between one hemisphere and the other, of modifications attributable to age, race, degree of intellectual attainment, of defects found in a number of different pathological conditions (e.g., the congenitally blind, deaf-mutes, oligophrenics). Apart from the microphotographs, a number of diagrams illustrate with clearness and precision the groundwork on which such pathological investigations are based.

For the specialist the volume is indispensable; to him its appeal is direct and immediate.

DIETS FOR INFANTS AND CHILDREN.

Clinical Pediatrics. Edited by Prof. R. S. HAYNES, M.D. Vol. XII. *Infant and Child Feeding.* By H. B. WILCOX, M.D. London and New York: Appleton and Co. 1928. Pp. 202. 16*s.*

THIS unit of Prof. Haynes's admirable system of pædiatrics is likely to be one of the most useful and popular of the series, being devoted to a subject of such universal importance. The author's aim has been to present a clear account of the essentials of the physiology of nutrition, and to explain their bearing upon the problems of infant feeding. His object has been achieved with a considerable degree of success, and the book can claim to provide the student and practitioner with a system of infant feeding which, while based on physiological principles, is by no means as complicated as many of its kind. As a general rule, simple dilutions of fresh cow's milk with added carbohydrate are recommended in the feeding of normal infants when breast feeding is

not practicable. Special measures for the treatment of premature infants and of alimentary disorders are shortly described. The section on breast feeding forms a valuable feature of the book. The author stresses the importance of observing and recording the weight of the mother as well as of the infant, and discusses the deductions which may be drawn from the relation between the two weight-charts.

In one respect the title of the book is somewhat misleading; the diet of the child past infancy is hardly considered.

Die Ernährung Gesunder und Kranker Kinder. Second edition. By E. NOBEL, C. PIRQUET, and R. WAGNER. Vienna: Julius Springer. 1928. Pp. 160. RM.12.0.

THIS work, in which the Pirquet system of nutrition is applied to the practical feeding of healthy and sick children, has undergone some revision and amplification. In the first chapters the essentials of the theory are briefly set out and the nomenclature explained. As is now well known, the theory is based upon the hypothesis that the nutritional requirements of an individual stand in relation to the square of the sitting height (the "Siqua") rather than to the weight. The unit of nutritional value used is the "Nem" (Nährungs-Einheit-Milch), or amount of energy generated *in the body* by 1 g. of human milk. The requirements of the individual are reckoned in terms of a unit which represents one-tenth of the product of these two figures. The accounts here given of infant feeding and of the treatment of nutritional disorders are based on this method of calculation. Little importance is attached to the balance of carbohydrate and fat, provided that the latter is present in sufficient quantity to provide the necessary fat-soluble vitamins. The book has its limitations for the English reader, since Prof. Pirquet's system has made little headway in this country, and is unlikely to become the basis of practical dietetics. In fact, although it can probably claim the highest place from the standpoint of mathematical exactitude, the advantages of adopting so complicated a system are doubtful. However, the volume contains much that will interest those who make a study of nutrition and dietetics, especially the accounts of the treatment of various nutritional disorders.

EUGENICS.

La question eugénique dans les divers pays. By Dr. MARIE THÉRÈSE NISOT. Vol. I. Brussels: Librairie Falk Fils. 1927. Pp. 513.

IN this book Dr. Nisot has presented to those interested in eugenics and the problems allied to it a detailed and scholarly account of the social processes which in recent years have directed attention to this subject. In Great Britain, France, and the United States, which are dealt with in this volume, these processes have much in common. The rapid multiplication of socially useless types, the ravages caused among the best elements of the community by the war, and the relatively great fall in birth-rate of the better-endowed classes, are phenomena common to these three countries. Particular to England is the problem arising from her apparent numerical over-population, and to France and the United States the problem of regulating immigration. Dr. Nisot also discusses the remedies which have found favour in these countries. These remedies are variously calculated to increase the fertility of the socially valuable classes and diminish that of the dependent, hereditarily diseased, defective and delinquent classes, to regulate the process of immigration so that the quality of the national stock will not be impaired, and to promote interest in the eugenic aspects of marriage. Finally, the author reviews in considerable detail those legal enactments of Great Britain, France, and of the different States of the U.S.A. which bear upon eugenics, and describes the aims and scope of the eugenic institutions and publications of these countries.

The book is brought up to date to the end of 1926, and should prove very valuable to medical men anxious to gain a bird's-eye view of eugenics as a world movement and as a factor in the future of human welfare.

THE RATE OF LIVING.

By RAYMOND PEARL, Ph.D., Johns Hopkins University. London: University of London Press, Ltd. 1928. Pp. 185. 10*s.* 6*d.*

ACCURATE knowledge of the biology of groups, as distinct from the biology of individual organisms, has until recently been almost wholly lacking for any animal except man. A group of living things considered as a group has attributes and qualities peculiar to itself, and on the description and measurement of these attributes rests the foundation of the science of group biology. Prof. Raymond Pearl has devoted much attention to this new science, and in his latest book he reviews some of the main results of the experimentsl study of group mortality in the fruit fly, *Drosophila melanogaster*. In a clear introductory account of the laboratory technique employed in the collection of data, he emphasises his conviction that the lack of precise repetitive uniformity, which is commonly believed to be inherent in biological as contrasted with inorganic phenomena, is due in no small part to "general sloppiness and lack of specific, pertinent backgrounds of general knowledge in the conducting of biological experiments." Months, or even years, of careful observation of the habits of the subjects of experiment may be required before really significant experiments can be carried out.

Life tables are presented for the normal wild type fly, and these, when relative ages are compared, are very similar to those for human beings. But the life curves for the vestigial mutant of *Drosophila* are quite different. These differences are found not to be exclusively determined by environmental influences, although one particular environmental factor, density of population, is capable of converting the life curve of the normal wild type fly into that characteristic of vestigial flies at optimal densities. Further lines of inquiry were planned to probe deeper into the subject of life duration. An organism by virtue of its organisation is held to possess *inherent vitality*, which is manifested by the performance of certain vital actions in the absence of exogenous sources of matter and energy. With this conception further experiments with the following results were carried out. Wild type flies were reared under conditions of complete starvation and their life curves calculated. These (on a relative age base) are identical in form with those found for the same fly when fully fed. Thus the *form* of the life curve is the same whether the duration of life of the individuals comprising the group is an expression of total or only of inherent vitality. Under conditions of complete starvation differences in population density were found to have no effect on duration of life or on the form of the curve, which means that the profound effect of overcrowding in normally fed flies is not the result of any alteration in the inherent vitality of such flies, but merely curtails the bringing to expression of the potentialities of the inherent vitality. Since growth is a further expression of inherent vitality, supplementary proof can be sought and is afforded from investigations of this variable. Differences in the duration of life of flies and of growth rates in canteloup seedlings, under conditions such that these vital actions are the expression solely of inherent vitality, turn out to be the same in form. It would therefore seem to be demonstrated that the form of the distribution of differences of inherent vitality among different individuals is substantially the same in such widely different organisms as an insect and a plant. If rate of growth and duration of life be measured for the same organism under conditions such that only inherent vitality is expressed, a substantial negative correlation is found between these two variables. This and other evidence

supports the general conclusion that the duration of life varies inversely as the rate of energy expenditure during life. In other words, the length of life depends inversely on the rate of living.

The methods of analysis are essentially statistical, but the book is admirably written and should prove of great interest to the biologist.

JOURNALS.

ENDOKRINOLOGIE.—*Zentralblatt für das Gebiet der Inneren Sekretion und Konstitutionsforschung.* Edited by Prof. LEON ASHER and Prof. ARTHUR BIEDL. Leipzig: J. A. Barth. 1928.—This is a new monthly journal the publication of which is justified on the ground that up to the present there has been no scientific German journal dealing specifically with endocrinology. The morphological, experimental, and clinical aspects of endocrine investigation will be within its scope. The first issue consists of 80 pages, of which approximately half are devoted to five original articles and the remainder to abstracts of recent literature. The abstracts are about 150 in number and are in many cases of greater length than is usual. The five original articles in the first issues are by well-known authorities, and the journal should serve as a readily accessible source of German work on endocrinology. The first issue dated January, 1928, contains articles on Leydig Cells in the Human Testis by Prof. Alfred Kohn; Ovulation during Pregnancy brought about by Anterior Lobe Pituitary Hormones by Prof. B. Zondek and Prof. S. Aschheim; Infantile Myxœdema by Prof. F. de Quervain; the Function of the Intrarenal Tissue of the Torpedo by Prof. B. Kisch; on the Action of the Male Sex Hormone Obtained from Plants by Prof. S. Loewe.

The paper by Prof. Zondek is of exceptional interest. He brings forward evidence to show that ovulation can be made to occur in the pregnant mouse by means of implantation of the anterior lobe of the pituitary gland. After the implantation the follicles ripen, burst, and ova reach the tubes. The state of the ova varies; some show a well-developed nucleus, others a nucleus broken up into chromatin threads. In the majority, however, it is pigmented and degenerated. The ovary itself in this experiment shows in addition to the corpora lutea graviditatis young corpora lutea from the follicles produced under the new stimulus. These phenomena occur side by side with living fœtuses in the uterus. The amount of anterior pituitary implanted varied from 50 to 100 mg.

The third issue of the journal (March, 1928) contains original articles on the Hyperfunction of the Liver in Graves's Disease by Prof. N. Pende of Genoa, and on the Ovarian Hormone and Blood Calcium by Drs. M. Reiss and K. Marx. Prof. Pende discusses the connexion between the functions of the thyroid and the liver. It has been found by various observers that the livers of thyroidectomised animals show certain changes—namely, cloudy swelling, fatty infiltration and atrophy, and diminution in glycogen content. There is also an increase in blood cholesterol, diminution of urea and an increase of amino-acids. It is known, moreover, that in hypothyroidism the blood-sugar curve is low, indicating diminished glycogenolysis. It has therefore been concluded that hypothyroidism is accompanied by hypohepatism. Prof. Pende attempts to show that the analogy can be extended further so as to correlate hyperhepatism with hyperthyroidism. The investigations which he has made include observations of the blood-sugar curve and other liver functions in patients with Graves's Disease. The results are interpreted as showing that in each of the liver functions tested the patient with Graves's disease shows an exaggeration of the normal picture. The findings are suggestive, but it remains doubtful whether the existence of a condition of hyperhepatism has been proved. Dr. Reiss and Dr. Marx discusses the relationship between the ovarian hormone and the blood calcium. Using rabbits and Biedl's preparation of ovarian extract they were able to show that the blood calcium could be lowered as a result of daily injections from a control value of between 14·1 and 15·3 mg. per cent. to 11·3 mg. per cent. The experiment seems to have been well controlled and the conclusions justified.

ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES.

THE annual report for 1927 reaches us as we go to press. The resignations from the Council of Sir George Maxwell, and of Colonel Walter G. King, are recorded with regret. During the year, at the invitation of the Spanish Government, a visit was paid to Madrid by Sir Aldo Castellani, who gave lectures on malaria before the Royal Academy of Medicine and other societies. At the Seventh Congress of the Far Eastern Association of Tropical Medicine, held in Calcutta in December, 1927, the Institute was represented by Sir Malcolm Watson, who proposed two resolutions, which were seconded by Lieut.-Colonel S. R. Christophers, and passed by the Malaria Section of the Congress. In the first resolution it was suggested that plans for railways, canals, harbours, and all similar engineering works likely to affect the conditions producing malaria should be submitted to the proper public health authorities before being sanctioned by governments. The second resolution emphasised the fact that while there is no single method of malaria control applicable to all conditions and all countries, in large towns or works the control of the breeding places of the malaria-carrying species of mosquito is a method which should be employed whatever other anti-malarial measures are put into force. For wide rural areas, especially those with scanty, poverty-stricken populations, the first step in the control of malaria is adequate research, since suitable methods of prevention may vary in different districts. The need not only of thoroughly trained malarial research officers but of expert malarial engineers in any type of malarial prevention was stressed by the Congress. Sir Malcolm Watson, after many years active malaria control work in the Malay States, has now joined the Institute as Principal of Malaria Prophylaxis and Control Department.

There was a very large demand from India and the Colonies for the report on malaria control in Malay and Assam by Sir Ronald Ross, following his tour of inspection in 1926–27.

Anti-malaria Propaganda Work.—In order to obtain a general idea of the manner in which malaria was being dealt with in different parts of the Empire, the organising secretary, Major H. Lockwood Stevens, made a tour of India, the Federated Malay States, and Ceylon, and also visited Burma. His tour will be the subject of a special report.

Research Work.—Dr. P. Menon has carried out experiments on the poisonous effects of Paris green on the aquatic stage of mosquitoes other than anopheles. Work on fungi and fungal diseases has been continued. Several new species of mycetes and bacteria have been described. A satisfactory treatment for epidermophytosis of the toes (so-called mango toe) has been found. Experiments have also been carried out on the longevity of certain microbes. Dr. J. A. Shaw-Mackenzie has continued his work on the blood and tissue changes in cancer with reference to diagnosis and treatment. Independent confirmation of some of his conclusions has been obtained by Prof. W. C. Lewis and Mr. R. F. Corran working at Liverpool, and by Prof. D. Gardner, of Paris. Mr. J. Jackson Clarke has been engaged in further experimental study of diseases in which both specific alien cell-inclusions are present, and filter-passing stages of parasites have been found.

A list of scientific publications, addresses, and reports by members of the staff of the Institute, visiting medical men working at the Institute, and a statement of accounts concludes the report.

THE LANCET.

LONDON: SATURDAY, JUNE 16, 1928.

MEDICAL STATISTICS.

THE status of that branch of research concerned with statistics as applied to biological problems is now very different from what it was 30 years ago when Prof. KARL PEARSON was publishing the earlier memoirs of the series of fundamental researches which have so profoundly modified the aims and methods of statistical investigation. It is not claimed that any contribution to the science or art of clinical or preventive medicine of first-rate importance during the last 30 years has been the direct result of purely statistical investigation. But there can be no doubt that PEARSON and his school have raised the standard of medical discussion in the English-speaking world, so that many, even amongst those who believe themselves to be hostile to the teaching of the biometricians, have cause to be grateful to them for lessons in logic not wholly wasted. Two results have followed. Collective investigation, the team-work which—for other reasons than those we are discussing—has grown into fashion, is much more efficiently carried out than in the past; therapeutic claims of doubtful validity are, in spite of the immense opportunities for the exploitation of credulity which the developments of popular journalism and commercial advertisement provide, more sceptically received and, on the whole, less commonly accepted at full value than a generation ago. No doubt the cynic—particularly if he has read Prof. E. C. DODDS's illuminating article in THE LANCET of June 2nd—will retort that many medical men do still display in the employment of, say, "endocrine" therapy a too ingenuous faith in the general impressions which GALTON stigmatised as no more than superstitions. We admit that there is need to raise the standard of logical appraisement in clinical medicine still more. But the insistence of the biometricians upon statistical standards, their demands for numbers and percentages, have already done good and will do more good yet.

Wholly apart from the question as to what may be achieved by the application of the more recondite of modern statistical methods, such work as that of Dr. JANET LANE-CLAYPON [1] in establishing arithmetical standards by which the mass results of various surgical procedures may be appraised, has been of the greatest practical value. That work, which has always been submitted, before publication, to the criticism of experienced clinicians, illustrates the importance of the coöperation for which Dr. PERCY STOCKS pleads in the article and letter which we publish in our present issue (pp. 1242 and 1250). Medical practitioners can, and should, use many statistical methods for themselves, but statistical technique, like that of any other branch of science, has been so greatly extended that specialisation is inevitable, and many statistical problems—like that of cancer, to which Dr. STOCKS refers—cannot be solved without coöperation. The future of medical statistics is full of promise, and we trust that Dr. STOCKS's appeal will not be unheeded. The claims made by him on behalf of the statistical method as an instrument of medical research are not exaggerated; probably any of the few medical-statistical enthusiasts who were writing a generation ago would have claimed more; but this modesty of statement does not result from weakness or disappointment, but is both a sign and a cause of strength.

There is one aspect of the subject which demands comment. There is a general belief in our profession that statistical research, or even the perusal of the results of such research, is a hopeless undertaking for any but those who have an aptitude for, or at least considerable knowledge of, mathematics. It is foolish to cry peace where there is no peace, and we shall not deny, first, that a considerable proportion of the papers dealing with medical statistical problems are, and must be, written in a language which the ordinary medical reader cannot understand; secondly, that probably no living medical man in this country has a sufficient mathematical equipment to enable him to make any sensible contribution to the development of statistical theory which owes almost all its refinements to the labours of consummate mathematicians, the Bernoullis, the Laplaces, the Pearsons, and the Tschouprows of different ages and nations. But that statistical research work of the greatest importance has been, *and will continue to be*, effected with a technique and described in a language which any educated man can understand, was demonstrated by FARR a generation ago, and Dr. T. H. C. STEVENSON in our own time continues to give proofs of the propositions. We do not think the high price, or the traditional reputation for dullness, of blue-books is a sufficient excuse for the prevailing professional ignorance of the important researches published in the Annual Reviews and occasional Supplements of the General Register Office. If more of our readers would study these reports, they would realise how interesting and how clinically suggestive are many results which can be reached by the sagacious application of very simple statistical methods, and Dr. STOCKS—to whose undertaking we heartily wish success—would find no difficulty in obtaining the coöperation he seeks.

[1] See THE LANCET, 1926, i., 618; 1926, ii., 671.

PROFESSIONAL PROTECTION.

THE need for the practitioner to insure himself against the risks of expensive professional litigation is now more urgent than ever. Membership of one of the defence societies provides protection at the cost of an almost negligible premium (which a doctor is allowed to deduct from income for income-tax purposes); it should be regarded as an indispensable step on the part of everyone who enters the medical profession. It is not only that there is the risk in exceptional cases of vindictive verdicts with heavy damages. There is also an increasing readiness to formulate against members of the medical and dental professions complaints and criticisms to which reply must be made whatever the expense. This tendency is partly due to the general spread of education in health matters, partly to the national health insurance system which provides machinery for ventilating real or imaginary grievances against the panel practitioner without serious cost or responsibility on the part of his critics. A cheap and widely read daily press seems to give special prominence to any proceedings in which a doctor is defendant, and it is undoubtedly true that, when publicity has been given to a particular case, the incident is sure

to be followed by a crop of similar claims arising all over the country. It is thus the more desirable that every action against a practitioner in his professional capacity should be defended with the utmost vigour and the best available skill. Valuable time and money can often be saved by settling claims before they are brought into court. In this kind of work experience is all-important; the legal adviser who, for all other purposes can be relied upon, will rarely be able in this particular field to give the expert assistance which is at the disposal of the solicitors to the defence societies who are dealing with such matters every day. Complaints of careless diagnosis or negligent treatment, libel and slander actions, allegations of wrongful certification under the Lunacy Act—these and other dangers are regular risks in the practice of medicine. Those who help to operate the National Health Insurance Service, or who hold public appointments in institutions and poor-law hospitals, know themselves to be exposed to special attack. In the "Conduct of Medical Practice," published in book form by THE LANCET last year, it was pointed out that, in framing a contract for medical partnership or the engagement of an assistant, it is prudent to stipulate for membership of one of the defence associations. In partnership matters, indeed, quite apart from protection against litigation and the complaints of patients, the defence associations can give their services for the just and sensible solution of disputes between the partners where the law-courts are powerless, and where publicity is of no advantage to anyone concerned. The stronger, therefore, the membership of the defence associations, the stronger the position of the profession, both in its relations with the rest of the community and in its relations with its fellow members.

These general observations are prompted by a study of the annual record of the activities of one of the principal defence associations—the recently published report of the London and Counties Medical Protection Society, and similar sentiments have been expressed when the officers of the Medical Defence Union are giving an account of their stewardship. Membership of either body in no way absolves the member from the exercise of prudence or from maintaining the high standards of an honourable profession In such matters as the signing of certificates exactness is essential. If, for example, a doctor must give a certificate in respect of a patient whom he has not seen that day, this fact should be made clear. Further, as a matter of common sense and in their own interests, the members of a defence association should refer matters immediately to that body before dealing with them in any other way. Barristers have a favourite saying, that the man who is his own lawyer usually has a fool for a client. Not less than the medical profession, the legal profession is entitled to be called in early and to be given the fullest information. For his own protection, too, a doctor or surgeon should invariably secure X ray examination of any injuries where there is a possibility that fracture or dislocation has occurred; out of ordinary prudence he should be careful to provide himself with proof—in case it should ever be wanted—of the evidence which such examination reveals, or else of evidence that such examination was advised and refused. It may not be out of place to add here, since medical practitioners so frequently are brought into the courts as witnesses and not as plaintiffs or defendants, that the doctor who is asked to give evidence in cases other than those (such as Coroners Act proceedings), where the fee is definitely fixed, may save himself much ultimate trouble by having the amount of his remuneration ascertained and agreed in advance. Finally, to return to a matter more directly the concern of the medical defence societies, these bodies in self-protection must insist that their services cannot be given to those whose subscriptions are in arrear; the constitution and articles of the society must always be specific upon this point. To allow the benefits of such a valuable insurance to lapse for want of the punctual and regular payment of so small a premium would be a strangely false economy.

A HIGHER DIPLOMA IN MIDWIFERY AND INFANT WELFARE.

THAT the persistent high death-rate from puerperal sepsis is a matter of grave national concern was indicated by the Minister of Health in the House of Commons some weeks ago and more recently by the appointment of a Departmental Committee to advise upon the application of modern medical and surgical knowledge to maternity problems. Responsible medical opinion is also fully alive to the unsatisfactory state of matters, as is shown by the frequent discussion of causes and remedies in the medical journals. In our issue of last week we reported a discussion opened by Dr. JAMES YOUNG at the Edinburgh Obstetrical Society. Dr. YOUNG brought forward strong arguments in favour of the view that autogenous infection played but a small part in the causation of puerperal sepsis, that contagion was less important as a factor than many have believed, and that the main reason for the persistence of the high mortality-rate was trauma to the maternal passages during delivery. A hundred years ago the practice of obstetrics was largely a matter of "standing by" and allowing Nature to effect spontaneous delivery—of only interfering as a last resort, when Nature's efforts had failed. No doubt this policy was rendered necessary by the dire results following interference in pre-Listerian days, and was favoured by the comparative novelty of, and consequent unfamiliarity with, the obstetric forceps. To-day forceps are no longer a novelty. Their method of application is familiar to every senior student. His "cleverness" in midwifery practice is likely to be often measured by his readiness to use them, while the use of antiseptics now renders their employment comparatively safe. It may be that the conditions of modern busy general practice make it more difficult for the practitioner to pursue a policy of masterly inactivity than it was in the leisurely days of a century ago. It may be, as Dr. YOUNG indicated, that the obstetrician can plead that there is an increased sensitiveness to pain, or incapacity to bear it, on the part of the modern woman, as compared with her ancestors, or that her powers of resistance are less and exhaustion sets in earlier during labour. While modern technique has rendered the use of forceps comparatively safe as regards actual introduction of infection, the factor of trauma still remains, and no one who has seen many instrumental deliveries, and the bruised and lacerated tissues that seem to be the almost inevitable sequel of even the most careful and skilful use of forceps, will be disposed to quarrel with Dr. YOUNG in his contention that trauma from artificial delivery is one of the chief factors in the persistence of the high maternal mortality-rate.

If the conditions in modern practice are to blame they must be improved. Granted that forceps delivery in selected cases may actually prevent trauma, it must

also be granted that the incidence of pyrexia in cases delivered instrumentally has been found by careful observers to be larger than in those where delivery had been spontaneous. Many factors combine to incline both patient and medical adviser to hasten delivery when there is no real indication, maternal or fœtal, for interference. This is an aspect of the matter which will doubtless receive due consideration from the new Departmental Committee. It is an aspect that has been considered over and over again in these columns, while it received earnest attention from the authoritative writers who contributed to THE LANCET Special Supplement upon Difficult Labour.[1] Improvement of the conditions under which the bulk of obstetric practice is carried on, with consequent diminution of instrumental interference during the normal course of labour, will do much to diminish trauma during delivery. But this is not the only place to look for reform, and we are here chiefly concerned with the better education of the obstetrician in the practice of his art. Fortunately, in many of our medical schools greater stress is now being laid on a thorough training of the student in obstetrics than was the case a few years ago. But the difficulties are many. The curriculum is already overcrowded. The time allotted to the study of obstetrics is too short and the material available for practical teaching often scanty. Every general practitioner ought to be an obstetric specialist, with a good, practical training in antenatal work. He should know when interference is necessary, and when it is advisable to wait, and he should, when operative interference is indicated, be able to undertake it with skill and with the minimum degree of injury to mother and child. This is an ideal that is probably impossible of attainment by the undergraduate student. A certain amount of antenatal training he may get. He may learn the principles governing the conduct of labour, but experience and skill in the actual conduct of abnormal cases can only come by practice on his own account, under the supervision of those who already possess these qualities. This implies post-graduate work, and especially a term as resident in an obstetric hospital. After such a term of residence the possession of the necessary theoretical and practical knowledge might well be indicated by the granting of a higher diploma. If this were done the general level of professional training in a most important branch of our learning would be raised.

We have received from the Secretary of the Society of Apothecaries the regulations for admission to the "Mastery of Midwifery," the first examination for which is to be held in the autumn, and they show that the standard of the new diploma is to be a high one. Candidates must, after qualification, have held a resident appointment for six months in a recognised obstetric hospital. They must have attended a recognised antenatal clinic and an infant welfare centre for not less than three months each. One examination will be held, both written, clinical, and oral, in obstetrics and infant welfare and in the diseases of infancy. There will be three written papers, two of which will concern the science and practice of obstetrics and one the subject of infant welfare and the diseases of infancy. There will be a clinical examination at a hospital both in obstetrics and in the diseases of infancy, and finally there will be an oral examination in each of the two branches of the subject. Until 1932 practitioners of ten years' standing may enter for the examination provided that they can produce evidence that they have made a special study of the subjects for the Mastery. The establishment of the new diploma is an important step and one that should be favourably regarded by the profession as a whole. An impetus will thus be given to the post-graduate study of a group of subjects closely concerning the welfare of the nation, subjects upon which the public looks to the general practitioner for advice in directions of supreme importance. Further the Society of Apothecaries is right to believe that it will be an advantage to the public and to the medical profession that those who possess such special knowledge and experience in midwifery and infant welfare should have some mode of indicating that fact. But this implies the necessity that the really high standard foreshadowed in the regulations will be reached and maintained. Only in this manner can the general confidence of medical men be secured.

[1] Modern Methods in Abnormal and Difficult Labour. THE LANCET Office. 12s. net.

Annotations.

"Ne quid nimis."

ALKALIS AS THERAPEUTIC AGENTS IN GASTRIC DISEASE.

THE majority of physicians are agreed that alkaline salts are of great value in the treatment of gastric ulcer, but there is still a lack of precise knowledge as to the efficacy of the various agents commonly employed. Thus, whilst bicarbonate of soda is a time-honoured favourite in the hands of many practitioners and of the laity, there is a considerable volume of medical opinion which alleges that as an alkali it has decided disadvantages, and, at the other end of the scale, we find bismuth retaining its popularity in antacid treatment, although it has long been recognised that its alkaline power is of the slightest. Bourget [1] long ago laid down that whereas 2·3 parts of bicarbonate of soda were required to neutralise 1 part of hydrochloric acid, the same effect could be produced by 0·5 parts of magnesium oxide or 1·25 parts of ammonium magnesium phosphate. The same author is perhaps chiefly responsible for the doctrine that bicarbonate of soda, if administered in greater strength than 1 per cent., acts as a stimulus to gastric secretion in such a manner that its neutralising effect is more than counteracted. It is clearly desirable that we should know more about the value of the various therapeutic agents used in such quantities in gastric medication, and we therefore welcome the contribution by Messrs. Freezer, Gibson, and Matthews which appears in the *Guy's Hospital Reports* for April, 1928. These observers have carried out very careful laboratory experiments to determine the value of the various salts commonly used to neutralise hydrochloric acid, and they conclude that bismuth oxy-carbonate is the least effective of all, whilst tribasic magnesium phosphate appears to be the most suitable for the rapid counteraction of gastric acidity. They suggest at the same time that tribasic calcium phosphate, citrates, and calcium carbonate are almost equally effective, and finally they conclude that milk itself is probably the most important factor in the reduction of acidity owing to its buffer content which enables it to neutralise considerable quantities of acid. The results are of value in that they indicate certain useful antacid salts which are free of the risk of producing alkalosis such as has been observed in patients undergoing intensive treatment for gastric ulcer. But it is also clear that experiments carried out entirely in the laboratory must be accepted with considerable reserve before their conclusions are accepted as applicable to the human subject. In his recent text book Crohn,[2] stressing the point that the modus

[1] Bourget, L.: Krankheiten des Magens, Wiesbaden, 1906.
[2] B. B. Crohn: Affections of the Stomach, Saunders, 1927.

operandi of alkali treatment is frequently not properly understood, writes :—

The solution of an alkaline salt inserted into the fasting stomach both leaves the stomach rapidly through the pylorus and is readily reduced in its alkalinity by an outpour of acid gastric secretion. Thus, a strong solution of alkali increases gastric emptying and stimulates the stomach to secrete so as to re-establish the normal acid equilibrium. If during a fractional test-meal a dose of alkali is administered through the tube it will be noted that the acid curve is immediately neutralised and the free acidity wiped out or diminished depending upon the amount and dosage of the alkali used. The secondary phase of the reaction then ensues characterised by an acceleration of the secretion of gastric juice resulting in a subsequent rise of the acid curve equal to or above the previous altitude obtained by the test-meal.

And in a later passage he adds : " One should never try to alkalinise the whole acidity of the stomach. It is a mistake, since small doses of alkali give the necessary relief by relaxing the pylorus and relieving the intragastric tension." Whether sufficient evidence yet exists to permit of whole-hearted acceptance of the views of even so experienced an observer as Crohn is perhaps doubtful, but it is certain that before any final opinion can be formed concerning the value of these therapeutic agents observations must be made on the living subject in order to determine, not only the value of alkaline salts in neutralising a volume of hydrochloric acid in a test-tube, but which of them, if any, stimulate increased secretion by the oxyntic cells, and what effect they may have in producing pyloric relaxation and regurgitation of alkaline duodenal contents.

ALCOHOLIC POISONING.

IN the United States the number of deaths attributed to alcohol has considerably increased since Prohibition was introduced. For this anomaly there are various explanations, one of the most authoritative being that of the Statistical Division of the Metropolitan Life Insurance Company,[1] that the greater mortality is due to bad liquor rather than to heavier drinking. Dr. George Bigelow, however, of the Health Department of Massachusetts, declares[2] that the thousands of liquor samples examined annually for the police by his department show no appreciable increase in toxicity. A report by Dr. H. C. Lythgoe in the same journal states that, out of many samples of liquor supposed to have caused death, only one contained a toxic substance other than alcohol, and that was an isolated sample containing 23 per cent. of methanol. Dr. Reid Hunt who tested upon albino rats 100 suspected samples sent him by Dr. Lythgoe, found that the only poisonous substance present in any quantity was ethyl alcohol. In describing his experiments he says :—

" Solutions in which a part of the ethyl alcohol was replaced by an equal amount of methyl alcohol were tolerated in larger single doses than was ethyl alcohol alone ; thus, whereas rats died from 26 c.c. of the solution of pure ethyl alcohol, they survived doses of 31 c.c. of a solution in which 10 per cent. of the ethyl alcohol was replaced by an equal amount of methyl alcohol, and survived 34 c.c. when 20 per cent. of the ethyl alcohol was replaced by methyl alcohol. If a small part of the ethyl alcohol was replaced by methyl alcohol the preparation was less toxic in both acute and chronic experiments than were the preparations containing only ethyl alcohol ; the presence of the methyl alcohol lowered the acute effects (by diminishing the amount of ethyl alcohol, but such amounts of methyl alcohol were not sufficient to have a cumulative toxic action."

Going on to discuss the problem of alcoholic poisoning in the U.S.A., Dr. Hunt remarks that a certain number of deaths have been reported in the past from drinking methyl alcohol, but that very few have occurred recently. There is very little evidence, he says, that the deaths which so often follow consumption of illicit liquor are due to anything but ethyl alcohol. A deeply intoxicated man only requires a slight further dose to kill him, especially when the liquor is very potent. In three cases of death from " poison whisky " reported to Dr. Hunt, the liquor contained 60 to 80 per cent. of ethyl alcohol and no other poison. This is an enormous alcoholic strength.

These experiments on animals are thus held to show that ethyl is decidedly more toxic than methyl alcohol ; the latter is admitted to have a certain cumulative action, but Dr. Lythgoe says that there is no evidence of its being harmful in the quantities in which it is found. He reports, further, that genuine bottled-in-bond whisky was slightly more toxic than nearly all the illicit liquor examined, and states that whisky, aged in charred oak barrels, becomes more poisonous as its age increases. Such conclusions will be regarded with astonishment in this country, where well-matured whisky has long been regarded as relatively innocuous and methyl alcohol as a dangerous drink. Pantaleoni has recently found that a mixture of equal parts of methyl and ethyl alcohols is more toxic to cats than either alcohol alone, and this may possibly account for some of the anomalous experimental results. But the truth is that though rats and cats are very well in their way, the question at issue concerns only the action of these alcohols on human beings. It is conceivable that by long centuries of use man has acquired an immunity—partial rather than complete—towards ethyl alcohol, which he has never had to cultivate for the lower homologue. Again, it may be that human beings more readily develop an immunity towards one alcohol than towards another. Cats and rats, having no previous experience of intoxication, either ancestral or personal, are entirely unprotected from its action, and though this does not explain the different effects observed on the two animals, it raises a reasonable doubt about the relevance of experiments conducted on animals whose inheritance or experience is so different from that of man. At any rate it is worth recalling evidence from other sources.

In his book on " The Action of Alcohol on Man," written during the late war, E. H. Starling says that the effects of methyl alcohol are " very deleterious, and its use as an intoxicating agent for a few weeks had led in many cases to permanent blindness, due to atrophy of the optic nerve." A study of the literature of the subject shows that about the year 1898 a number of cases of blindness, due undoubtedly to the drinking of essences, were noticed in the United States and West Indies. At first they were attributed to the ginger and other characteristic constituents of the essences, but careful observation showed that the liquids which did the harm were those in which methyl alcohol was a solvent. In 1904 Buller and Wood described 275 cases of serious poisoning by methyl alcohol (153 cases of blindness and 122 of death). Later, in Berlin, 130 men drank " brandy " containing one-third methyl alcohol and two-thirds ethyl alcohol (presumably with some water). Of these drinkers 50 or more died, 42 became blind, and some recovered. Baskerville has reported 725 cases of wood alcohol poisoning, which included 390 deaths, and 90 total and 85 partial cases of blindness. There are many other recorded cases, and it has been deduced from them that the action of methyl alcohol is, pharmacologically, quite different from that of the higher homologue. The effect of a single dose of either is much the same, but with the methyl compound both intoxication and recovery are slower. It is true that in acute fatal intoxication of *lower animals* a slightly larger dose of methyl alcohol can be tolerated, but even in these species it affects chiefly the most highly differentiated nervous structures, as is shown by the prolonged coma induced ; and it is well recognised that poisons which affect such structures powerfully become proportionally more dangerous the more highly developed the nervous system of the animal. Whereas ethyl alcohol is easily oxidised to carbon dioxide and water in the animal system, and these products are rapidly expelled, the oxidation of methyl alcohol is slow and does not always go on to its final stage, formic acid apparently being slowly formed and slowly

[1] Statistical Bulletin, March, 1927, No. 3.
[2] New England Journal of Medicine, 1928, excviii., 227.

expelled. An animal is said to take some days to get over a bout of methyl alcohol, and it may be noted that the early effects of this spirit are not exhilarating. Whether or not it is true that ethyl alcohol "inspires us and fires us with courage, love and joy," we have no reason to suppose that pyroligneous spirit produces anything better than dullness of mind and sight.

SPLENOMEGALY DUE TO A FUNGUS.

ATTENTION was drawn in our columns recently[1] to French work performed during the last two years which goes far to prove that certain cases of the type usually diagnosed as Banti's disease or splenic anæmia are due to the infection of the spleen by a fungus. It was pointed out that in this particular type of splenomegaly the appearances presented by the spleen are identical with those described some years ago by C. Gamna as a new condition, and named by him splenogranulomatosis siderotica. So far back as 1913, Dr. A. G. Gibson, of Oxford, had noticed the presence of mycelial threads in spleens removed from cases of Banti's disease, and in our last issue Dr. Gibson, with Dr. J. Fawcett of Guy's Hospital, describes a further case in which mycelial elements were not only demonstrated in the spleen and recovered in pure culture, but the mycelia actually produced a splenomegaly on injection into a monkey and were recovered from it by culture of the blood. It is unfortunate that the monkey went the way of so many monkeys used for experimental purposes, and anticipated the end of the investigation by developing generalised tuberculosis. Even so, however, Dr. Fawcett and Dr. Gibson consider that they have fulfilled Koch's postulates and are justified in claiming the fungus they isolated as the cause of the splenomegaly in the patient and in the monkey. It is presumably the same organism as that described by Nanta as *Aspergillus nidulans*, and by Emil-Weil and his co-workers as *Eurotium amstelodami*. Sir Aldo Castellani, to whom the fungus of the Guy's case was submitted, identified it as belonging to the genus nocardia. The diagnosis of the condition from other forms of splenomegaly forming the Banti group appears to be difficult. A noteworthy feature of the Guy's case was the presence of a leucocytosis, in contrast with the leucopenia found in typical splenic anæmia. The presence of pyrexia also appears to have some importance in the diagnosis, though apyrexial cases are described by French authors and also in a recent contribution on the condition from Roumania.[2] On macroscopic examination of the spleen, suspicion as to the existence of the condition may be aroused by the presence of minute yellowish scars, when the diagnosis may be confirmed by the demonstration of mycelial threads in these areas.

HARVEY'S BOOK IN ENGLISH.

THE tercentenary of the publication of Harvey's "De Motu Cordis" has given an occasion for the disinterment of the only contemporary English version of his immortal treatise. This translation by an unknown hand was published in 1653 and again in 1673. Since that date it has never been reprinted, its place having been taken by Dr. Robert Willis's translation, published by the Sydenham Society in 1847. The new edition of the book has been edited for the Nonsuch Press by Mr. Geoffrey Keynes, F.R.C.S., assistant surgeon at Harvey's hospital, and has been printed in Holland on hand-made paper in a limited issue of 1500 copies. It is a book of great beauty, and is further distinguished by having a copper plate illustrating the valves in the veins of the forearm, engraved after a new drawing by Stephen Gooden. Mr. Keynes claims with some justice that the contemporary translation is well worth preserving, even if in respect of precise accuracy it falls short of the "dull excellence of the Victorian text." It is more vigorous and expressive than Willis's translation, and represents more nearly what Harvey would himself have written. Mr. Keynes has collated the texts of both editions of the seventeenth century, and has done such polishing as seemed absolutely necessary. He adds at the end an editorial postscript and textural notes recording the more important emendations. Scientific treatises do not often receive the care which is commonly given to works of literary interest. In the present instance it seems to have been well worth while, for the book is acknowledged to be one of the landmarks in the history of human thought. Sentiment demands that it be available in the form in which Harvey himself saw it, scholarship that it do not fall short of the standards of modern times. We congratulate both publisher and editor on the result of their labours.

THE TREND OF MEDICAL PRACTICE.

Two years ago the Association of American Medical Colleges set itself to discover the trend of practice in the United States, and with this object addressed a questionaire to doctors, trained at 52 different colleges, who had graduated in the years 1915 and 1920. Nearly 5000 letters were sent and about 76 per cent. of the recipients answered. The results are presented by Dr. H. G. Weiskotten,[1] and without going too closely into the statistics, which contain some sources of fallacy, it may be said that certain facts have been established. First, there has been a distinct increase in the number of medical men taking to specialist occupations; assuming that those of the 1920 class who intend to specialise do so within the next five years, the number of specialists in this class will be 9 per cent. greater than in the 1915 class. Secondly, there has evidently been an increase—though not so large—in the proportion of doctors holding salaried appointments, the number of which has doubtless risen with the spread of medical education and with administrative reforms. The first tendency is, of course, connected with the urbanisation of the United States, where, as in the older communities, the people are drifting more and more into towns. Medical men prefer to work in the large centres of population, and country practice, often involving the sole charge of a few poor and widely scattered patients, is carried on under such difficulties that the cities attract most of those who wish to make a good livelihood and have the ability to do so. Thus 40 per cent. of the graduates of 1920 had made their homes in towns with 100,000 inhabitants or over, although not much more than a quarter of the population at large is thus disposed. On the one hand, this tendency arouses alarm in those who have the care of the rural population at heart, and on the other it encourages specialisation among the practitioners who have to find a living beside many others of their kind. The same course of affairs is apparent elsewhere. In Berlin, for example, there are 14·9 doctors per 10,000 inhabitants, compared with only 7·45 in Germany as a whole,[2] and over 30 per cent. of German doctors describe themselves as specialists. In considering these figures it should be borne in mind that the term "specialist" bears a wider interpretation abroad than it does in this country. In the United States the number of men taking up the branches of "internal medicine" and surgery—many of whom would not be called specialists in England—is larger than in any other group except diseases of the eye, ear, nose and throat which are generally grouped together. The inquiry by the Association of Medical Colleges was made for the practical purpose of finding out what the students wanted to learn, and Dr. Weiskotten does not speculate on the reasons which lead them to specialise. He merely remarks that "these tendencies are undoubtedly in response to opportunities offered and demands made by society upon the medical college graduates." It is worth considering, perhaps,

[1] THE LANCET, April 14th, p. 767, and May 5th, p. 933.
[2] Sur la Splénomégalie Mycosique. By M. Popper and C. Rateanu. Bull. et Mém. de Soc. Méd. des Hôpitaux de Bucarest, February, 1928, p. 48.

[1] Bull. Assoc. Med. Coll., April, 1928.
[2] THE LANCET, April 7th, p. 731.

whether in this country good work might not be done by such a body as this Association, which could consider many questions arising concerning the present and future of medical education. A voluntary association of teachers would have much greater scope than the General Medical Council, which is limited in some directions by statutory considerations.

THE LATE SIR DAVID FERRIER.

IN recognition of Sir David Ferrier's pioneer work and scientific eminence it is the welcome idea of his friends and colleagues to perpetuate his memory in some permanent form. A letter has accordingly been sent out to members of the medical profession stating the intention of raising a fund for a Ferrier Memorial, and a committee of subscribers is being convened who will meet shortly in order to decide what form the memorial should take. The letter is signed by Sir Charles Ballance, Dr. William Bulloch, Sir James Purves-Stewart, Sir StClair Thomson, and Dr. Aldren Turner, the last named acting as treasurer. Those who reply favourably to the invitation—and we hope that this will include all those invited and many others—will be placed among the first list of subscribers, and it may be mentioned that, for the purpose of publication in the press, the names but not the amount of the subscription will be made known. We trust that many of our readers, whether or not in receipt of the circular letter, will support the movement and send their donations for the Ferrier Memorial Fund, either to Dr. Aldren Turner, 18, Harley-street, W. 1, or to the Westminster Bank, 1, Cavendish-square, London, W., when a receipt will be received from the bank.

VISCERAL SENSATIONS AND COUNTER-IRRITATION.

IN his Croonian lectures, the second of which we publish this week, Dr. Charles Bolton criticises [1] the theory of visceral sensation put forward by Dr. W. W. Payne and Dr. E. P. Poulton, who have shown [2] that œsophageal pain results from a stretching force in the viscus and have attributed it to tension exerted on "pain nerve-endings" in the walls. The pain, they pointed out, may be relieved either by peristaltic contraction, which overcomes the stretch, or by postural adaptation, which increases the capacity of the organ so that the tension is reduced. Tonus was defined as the tension of plain muscle during its diastole, and it was found that pain produced experimentally was associated with high tonus. The account of their further investigations, just published [3] is of considerable clinical importance, the more so as nearly all the numerous experiments were made on the observers themselves, whose accuracy can be depended upon.

The first part of their work is concerned with nausea, and as people disagree about the meaning of this term, they begin by defining it as a sensation felt at the back and lower part of the throat, usually unassociated with pain. It is often accompanied by—but should be distinguished from—uneasy "sinking sensation" in the pit of the stomach. Nausea was induced by swallowing rubber bags containing variable quantities of air, whose pressure was recorded on a moving drum. The sensations of the subject, as signalled, were recorded on the same drum, and their relation to changes of pressure within the bag, and therefore to tension in the œsophagal wall, could thus be noted. A general transition was observed from the sensation of "nausea alone" to "painful nausea" and "pain alone." The fact that nausea was felt during œsophageal *relaxation* was held to suggest that the mechanism of its production is essentially the same as that of visceral pain, but because nausea comes on at a lower diastolic pressure than pain does a different type of end-organ is probably involved, reacting to a lower tension.

> "The relation of nausea and œsophageal pain is thus very similar to the sensations of pressure and painful pressure on a skeletal muscle, or of touch and pin-prick on the skin. In each case a slight stimulus produces the specific sensation and the latter gradually disappears completely as the stimulus increases, and finally pain alone is left."

Like visceral pain, nausea can be relieved, Payne and Poulton consider, by peristaltic contraction or by change of posture; conversely it can be produced by anything which increases the tension on the specific end-organs. Dr. G. H. Oriel informs them that, at sea, the sensation of nausea is felt during the retardation of movement towards the bottom of the ship's descent, and this observation is brought into line with their own work by the statement that the retardation tends to cause "a dropping of the unsupported soft parts and, consequently, an increased degree of tension in the specific end-organs for nausea in the œsophageal wall."

The next symptom investigated was the sensation of "sinking" in the abdomen. A rubber bag was passed beyond the cardiac orifice and large quantities of air were introduced into the stomach through a catheter. The sinking sensation thus produced is regarded as due to increase of tonus in the wall of the viscus and is thus "analogous in every way to nausea." On the introduction of air a desire to eructate was felt deep in the mid-line about the level of the clavicle; the feeling was that of a lump or "globus" situated here which would be dispersed by eructation. It might also be described, they say, as a feeling of "wind," and must clearly be analogous to "globus hystericus." They regard it as "different in quantity from nausea, though the two are obviously closely related, since they are felt in approximately the same part of the body and occur during the relaxations of an œsophageal peristaltic contraction, if the tonus is slightly increased." Other gastro-œsophageal reflexes were carefully studied, including what they call the "anti-regurgitation reflex," and it was found that the effect of gastric distension on the œsophagus depends on œsophageal activity at the time of its production. The smell of ammonia stimulates this activity; it is abolished by swallowing iced water; and it is found to be greater when the subject is not paying attention to the experiment. What chiefly interested the investigators, however, was the cutaneo-œsophageal reflexes, in their relation to therapeutic counter-irritation. As usual, the activity of the œsophagus was measured by means of a bag, whilst the skin was stimulated by applying turpentine stupes, mustard-leaf plasters, or lin. camph. ammon. over the sternum or by pinching or rubbing with cotton-wool or the bare hand. The type of response was independent to the method of stimulation employed, but partly varied with the activity of the viscus just before it was applied. When the œsophagus was quiet stimulation caused immediate activity, which tended to die down after stimulation or during prolonged stimulation. When the organ was already active, counter-irritation usually decreased its activity sooner or later. The effect of rubbing or otherwise stimulating the skin at a distance—i.e., on the calf—was apparently just the same. So far, these particular experiments had been painless, but as counter-irritation is used in practice to allay pain, tests were made in which an œsophageal bag was filled almost to its full capacity, so as to produce continuous retro-sternal pain, and the result of rubbing the skin was again observed. The effect was comforting and the irritations caused a fall in diastolic pressure. According to Payne and Poulton's theory of visceral pain this relief might be traced either to a reflex increase of posture leading to a fall of diastolic pressure, and hence a lessening of tonus and tension on the pain nerve-endings, or else to frequent systolic contractions of the muscle-wall which take the strain off these endings. With an active œsophagus counter-

[1] THE LANCET, June 9th, p. 1161.
[2] Jour. Physiol., 1927, lxiii., 217.
[3] Ibid., 1928, lxv., 157.

irritation is apt to produce periodic waxing "and waning" of its movement, so that tracings resemble those of rather irregular Cheyne-Stokes breathing. As the tonus is lowered during the waning phase, while the number of contractions is increased in the waxing phase, the tendency is all the time towards the relief of pain. As, however, there was one experiment in which there was neither a fall in diastolic pressure nor an increase in contractions, the investigators admit that their theory does not provide a complete explanation. Possibly the cutaneous sensation produced by rubbing acts partly by diverting attention from œsophageal symptoms. It should be noted that when, owing to long stimulation, the posture of the œsophagus has reached its maximum counter-irritation has no reducing effect on the tonus and may even increase it.

CARLISLE INFIRMARY AND THE FEVER HOSPITAL.

AN assistant commissioner of the Charity Commission has just held an inquiry into a difficult question which has arisen at Carlisle. The Fever Hospital in that city was established in 1818 on what was then a rural site, and has ever since been managed under the terms of the original trust deed. It is now in the centre of a populous neighbourhood, which is regarded as unsuitable for an institution for the treatment of infectious diseases. Since, however, the City Corporation and the Carlisle Rural District Council have for many years past largely maintained the hospital, an application has been made to the Charity Commissioners to transfer its control from the trustees to the Corporation, and the Commissioners have prepared a scheme in that sense. This scheme is being strenuously opposed by the governing body of the Cumberland Infirmary, which is only 150 yards from the Fever Hospital, on the ground that, in the event of further extensions becoming necessary, the site and buildings of the Fever Hospital would provide the necessary means of enlargement, and that, in any case, an institution for the treatment of cases of infectious disease is in its wrong place amid a considerable population. The case for the Corporation is that to transfer the Fever Hospital to a rural site would involve an expenditure which cannot be faced. Dr. Joseph Beard, the medical officer of health, calculates that to provide a new isolation hospital with 70 beds would cost at least £45,000, without counting the site, furnishings, and fittings. The trustees of the Fever Hospital are willing to sell to the Corporation for £1000, but the Committee of Management of the Infirmary are prepared to buy it in the open market. Mr. Norman Maclaren, one of the honorary surgeons of the Infirmary, urged the importance of its extension, and pointed out that 150 beds would not be in excess of the needs of the district. Both he and the Dean of Carlisle laid stress upon the helpless position of the Infirmary if its only means of extension were removed. The position is one of great difficulty, but it would be highly regrettable if the Charity Commissioners should decide that it is better to keep an isolation hospital in a thickly peopled area than to permit a large and important voluntary hospital, with rapidly increasing responsibilities, to avail itself of its only practicable means of expansion.

DIAGNOSIS OF MEASLES BY ULTRA-VIOLET LIGHT.

Dr. W. H. Wadsworth and Dr. E. A. Misenheimer[1] decided to give ultra-violet irradiation to a child whose measles rash had faded five days before, and on exposing the skin to the rays in a darkened room they were surprised to see what seemed to be an ordinary generalised eruption covering the torso, face, and legs. This led them to try exposure to the rays during the pre-eruptive stage of measles, and they found that the eruption could be seen beneath the epidermis before it made its appearance in daylight. In 14 cases the rash showed on the skin at periods ranging from 33 to 76 hours after it became visible by ultra-violet light. The method further enabled them almost to negative a previous diagnosis of measles in two children who had been exposed to infection and whose temperature was as high as 103° F. In a case of scarlet fever the rash showed plainly 11 hours before becoming visible to the unaided eye. They express the hope that this simple procedure may be useful both as a means of early diagnosis and as a check upon tentative diagnoses in various eruptive diseases such as smallpox, enteric fever, scarlet fever, and syphilis. If their observations are confirmed there can be no doubt of their value in diagnosis. It would be a great advantage were we able to ascertain that the eruption of a given disease would appear on the skin in a certain number of hours, since it is generally held that most of the fevers are chiefly infectious in their early stages. The method might be also of value after an eruption has appeared; when, for example, the rash of rubella has broken up and imitated that of scarlet fever, which it can do closely, it would be very useful to see the original eruption by means of ultra-violet rays. Wadsworth and Misenheimer do not tell us the form of apparatus used nor do they clearly describe their technique. Probably, however, they employed a mercury-vapour lamp. In a preliminary attempt in London to reproduce their results several children whose measles rashes had been gone for three, five, and seven days, were exposed to ultra-violet light from carbon-arc lamps for ten minutes each in a darkened room, but no rash was seen. Another child was exposed 36 hours before the rash appeared, but again nothing was seen. Under a mercury-vapour lamp a child with Koplik's spots seemed to show rather more mottling than the controls, but it was thought that the pattern did not correspond with that of the rash which came out later.

[1] Jour. Amer. Med. Assoc., May 5th, p. 1443.

THE Royal Society of Tropical Medicine and Hygiene will celebrate its twenty-first anniversary by a dinner at the Café Royal, Regent-street, London, on Wednesday, June 20th, at 7.30 for 8 P.M. Prof. J. W. W. Stephens, F.R.S., the president, will take the chair, and the principal guest will be Mr. L. S. Amery, M.P., Secretary of State for the Colonies. On the following day (Thursday, June 21st), at 8.15 P.M., the annual meeting of the Society will be held at 11, Chandos-street, Cavendish-square, W., preceded by a demonstration at 7.45 P.M. At the end of the meeting Prof. E. Brumpt, of Paris, will read a paper on the Differential Diagnosis of the Intestinal Amœbæ in Man. Applications for tickets for the dinner may be addressed to the assistant secretary of the Society at 11, Chandos-street.

THE annotation on Birthday Honours, published in THE LANCET last week, should have contained the names of Mr. John Marnoch, C.V.O., Regius professor of surgery in the University of Aberdeen, who has been promoted to a knighthood in the Royal Victorian Order; Major-general Walter Holland Ogilvie, C.B., C.M.E., Director of Medical Services in India, who becomes a knight of the Order of the British Empire; and Lieut.-Colonel Henry Simpson Newland, C.B.E., D.S.O., surgeon to the Adelaide Hospital, who has been made a Knight Bachelor. The list of Appointments to the Order of the British Empire ought to have included the names of Dr. Mangaldas Vijbhucandas Mehta, of Bombay, and Dr. Kishori Lal Chaudri, Assistant-director of Public Health in the United Provinces, who are appointed Officers, and Mrs. Martha Isabel Garvice, senior lady medical officer of the Egyptian Ministry of Education, and Dr. Ruth Young, personal assistant to the Chief Medical Officer of the Women's Medical Service in India, who become Members.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. D. P. H. Pearson is placed on the Retd. List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. W. J. Payne to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Temp. Lt. R. B. Martin relinquishes his commn.
Lt. on prob. J. G. Weston resigns his commn.
H. McNeill to be Temp. Lt.

ARMY DENTAL CORPS.

Capts. W. W. Pittuck and W. M. Ferguson to be Majs.

ARMY RESERVE OF OFFICERS.

Lt.-Col. M. P. Corkery, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. J. K. Rennie (late R.A.M.C., T.A.) to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. G. F. Hardy, having attained the age limit, relinquishes his commn. and retains his rank.

ROYAL AIR FORCE.

Flight Lt. H. B. Troup is promoted to the rank of Squadron Leader.

Flying Officer F. F. Anslow is promoted to the rank of Flight Lt. (Dental) on promotion to the rank of Captain in the Army Dental Corps.

Flight Lt. (Hon. Squadron Leader) H. C. Perkins relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader.

The undermentioned Flight Lts. (Captains Army Dental Corps) relinquish their temporary commissions on return to Army duty: F. S. S. Whiter and F. F. Anslow.

INDIAN MEDICAL SERVICE.

Lt.-Cols. J. W. D. Megaw and W. D. A. Keys (Bt. Col.) to be Cols.

Capts. J. E. Ainsley and R. A. Leembruggen to be Majs.

Lt. T. A. Malone to be Capt. (Prov.).

Lt.-Col. H. C. Keates retires.

COLONIAL MEDICAL SERVICES.

The following appointments have been made by the Secretary of State for the Colonies: Miss C. N. Twining, Lady Medical Officer (Kenya); Capt. M. Clayton-Mitchell, Resident Surgeon (Colonial Hospital, Grenada), and Dr. I. M. M. Aitken, Lady Medical Officer (Gold Coast).

"WESTMINSTER HOSPITAL WEEK."—The pathological laboratories, X ray, electrical, and other departments of Westminster Hospital were opened for public inspection on several days last week, and on Thursday there was a street collection, in addition to special collections at Waterloo and Victoria stations.

JOINT TUBERCULOSIS COUNCIL.—At a meeting of the Council held on May 19th Dr. Lissant Cox commented on a report by Dr. James Pearse (see THE LANCET, Jan. 21st, p. 154) dealing with the coördination of the public health services in county practice. In Essex, Hants, Gloucester, and East Sussex it is now the custom to appoint whole-time officers to act as assistant medical officers of health, school medical officers, maternity and child welfare officers, and tuberculosis officers. The Council considered that such a plan must be carefully safeguarded if it is not to cause deterioration in the tuberculosis service; in their view assistance in diagnosis or treatment by a consultant tuberculosis officer should be available for every case of tuberculosis, recognised or suspected. Dr. A. S. MacNalty said it was the policy of the Ministry of Health to carry out the recommendations of the Astor report. In rural areas the Ministry were sometimes asked, on the grounds of convenience and economy, to sanction the appointment of assistant tuberculosis officers who were also responsible for other public health services; in such cases the Ministry advised the appointment of a *chief* clinical tuberculosis officer with special experience, and also required the assistant officers to have had a certain amount of experience in tuberculosis.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXX.—THE AMBULATORY TREATMENT OF VARICOSE VEINS.

II.* REACTIONS, COMPLICATIONS AND RESULTS.

Normal Reactions Following Injection.

Immediate Reactions.—Apart from the actual prick of the needle as it penetrates the skin, the process should be quite painless: pain during the course of the injection means that the fluid is finding its way into the subcutaneous tissues, and is an indication for ceasing the treatment at once. After the completion of the injection the patient may experience on getting to the upright posture quite a severe shooting pain in the region of the puncture, which is invariably described as passing distally along the limb. This phenomenon is but rarely observed, and the pain never lasts more than one or two minutes.

Delayed Reactions.—The nature of these should always be explained to the patient before commencing treatment. Within about 12 hours of the injection the segment of vein becomes a little swollen and is tender to the touch; it may ache slightly, the pain usually persisting for about three days, after which it diminishes. In addition to this local aching pain some patients experience pain of more severe type on getting out of bed first thing in the morning, and sometimes on rising from the sitting to the erect position. This pain may last from seven to ten minutes and then pass off, and is apparently due to the alteration of venous pressure in the dilated veins following the change of position and affecting the vessel walls in the region of the thrombus. Some patients experience a similar pain on blowing the nose, coughing or straining, and others describe a "jumping" pain at the site of injection. This reaction of swelling and aching in the vein is always likely to be more severe where this overlies a bony surface such as the tibia, or in any situation where the bony contours do not permit the vein to sink back into the soft tissues. Occasionally slight redness of the skin over the injected segment may be seen, but this is unusual. Some patients, particularly those with a rather thick layer of subcutaneous fat, will show a slight degree of bruising along the line of the thrombosed vein. As this is always linear in distribution it appears unlikely that it is due to leakage of blood from the site of puncture. This bruising always clears up, but may take six weeks or more to do so. After about the fourth day the thrombosed vein commences gradually to decrease in size, and continues to do so for about three months. Local tenderness usually disappears within a fortnight.

General Quinine Reactions.—Constitutional effects due to the quinine in the injection are described, but rarely observed. The drug may be tasted a few minutes after the injection has been given; the patient may suffer from tinnitus or headache, or in susceptible subjects a rash may appear. Injections should never be given to women during menstruation since griping hypogastric pain may be experienced.

Abnormal Reactions.

Blood Blisters.—These are occasionally seen, and are due to leakage of blood mixed with quinine-urethane into the subcutaneous tissues at the site of injection. They are usually about ½ inch in diameter and dry up in about three weeks. They can be avoided by digital pressure for a short time after the injection, followed by firm bandaging over the collodion dressing for about 24 hours.

Eschars.—These also are occasionally seen, and they are produced in the same way as the blood blisters, but the local damage is more severe, and

* Part I., dealing with General Considerations and Technique, appeared last week.

they may take five or six weeks to heal. They may also be avoided by pressure and bandaging described above. Similar eschars may be developed at a point some inches remote from the site of injection, and these are mostly due to the fact that an extremely thinned and atrophic vein wall and skin is unable to react to the chemical phlebitis. Injections should never be given directly into regions where the skin is atrophic and the vein wall obviously very thin. It is a striking fact that after thrombosis has occurred these thinned and atrophic areas of skin show remarkable properties of recovery of their elasticity and suppleness.

Sodium Salicylate Method.

Of the many other solutions employed as intravenous sclerosing agents sodium salicylate appears at present to be the only one used at all extensively in this country. The solution is a sterile one of chemically pure sodium salicylate, made up in 20, 30, and 40 per cent. strengths. As the salt is not precipitated on standing there is no necessity to warm before using, but specimens should remain colourless; those showing discoloration after being kept some time should not be used, since they may give rise to untoward effects.

In essentials the technique employed is the same as that described under the quinine-urethane method, but there are certain points of detail to which attention must be paid. It is usual to commence with 2 c.cm. of the 20 per cent. solution, which should be sufficient to thrombose about 4 inches of vein. The extent of thrombosis produced by each injection must be the guide as to the strength and amount of solution injected at subsequent sittings. If the 20 per cent. solution produces the requisite amount of thrombosis, succeeding injections may be confined to this strength. If thrombosis is not produced, or if it is of very small extent, 2 or 3 c.cm. of the 30 or 40 per cent. solution should be tried until the desired result is obtained. More than 4 c.cm. of the 40 per cent. solution should never be given at one sitting. As, however, the veins appear to develop a remarkable degree of tolerance to sodium salicylate it is important to work up as rapidly as possible to the strength found necessary to produce the required thrombosis.

During the course of the injection many patients experience a cramp-like pain in the muscles of the calf, which persists for a few minutes. The local reactions following the injections are in the main similar to those described under the quinine-urethane method. My own experience leads me to believe that with the salicylate method patients get more pain immediately following the injection, but less reactionary pain. Furthermore, the extent of thrombosis is liable to much greater variations—it may be absent, and it may be excessive. But in cases which respond to this form of treatment the results are excellent.

Pulmonary Embolism.

The fear of pulmonary emboli has long deterred surgeons in this country from the employment of a method which seems at first sight to invite this disaster. That the danger of embolus is not a very real one is shown by the fact that in the cases treated by Linser (6000), Nobl (2960), and Sicard and Gaugier ("many thousands"), no single case of embolus has been observed.

In the literature of the subject I am only acquainted with four cases of death from pulmonary embolus. In some of these the technique employed was open to severe criticism, and in one case the patient had been operated on for fistula in ano. No fatality of this nature has been recorded after the use of quinine-urethane or sodium salicylate.

As a post-operative complication the risk of pulmonary embolus is about one in a thousand after a major operation, with a very much greater risk after operations on varicose veins. As a risk following injection treatment it is extremely remote, as the figures quoted above clearly show, and its interest becomes almost academic.

The reason for the absence of emboli doubtless lies in the adherent nature of the thrombi. The fact that the blood flow in varicose veins is distally directed may play some part, but this is probably only of secondary importance.

Varicose Ulcers.

The general principles to be observed in dealing with varicose veins complicated by ulcers do not differ from those outlined above. Large varices are invariably present in the region of ulcers, and are much more easily palpated than seen. Especial attention must be directed to these, but small doses should always be employed on account of the lowered tissue vitality. Once a week the ulcer and its surroundings should be cleaned with ether and all debris removed. The ulcer may then be dressed with Unna's paste or with gauze soaked in the following lotion: prepared calamine and oxide of zinc, grs. 30 of each; dilute solution subacetate of lead and glycerine, dr. 1 of each; lime water to 1 oz. The patient is instructed to repeat this dressing on alternate days after gently cleaning the ulcer with water.

Results and Contra-indications.

Cure should be attained in every uncomplicated case. Three months after the injections are complete the fibrosed veins should either be impalpable or present only as fine fibrous cords in the subcutaneous tissues. Symptoms due to the veins diminish almost from the commencement of treatment and crêpe bandages and elastic stockings should be given up as early as possible. In the ulcer cases healing is a gradual but steady process. The time taken for this to occur will depend upon the size of the ulcer and the extent of the varices. Complete healing should occur in 80 per cent. of the cases either before or soon after thrombosis is complete. In the remaining 20 per cent. of cases this process is delayed either on account of underlying bone infection or the presence of some other serious constitutional disease. Clinically it will be observed that the intolerable pain which ulcer cases suffer is lessened, or entirely absent after the first few injections.

The quinine-urethane method should never be used during pregnancy, though possibly some other sclerosing agent could be employed. The following conditions are contra-indications to all forms of injection treatment, and with the exception of the first are contra-indications to any surgical procedure. (1) Recent phlebitis in the saphenous vein area; (2) old deep thrombosis with compensatory dilatation of superficial veins; and (3) cardiovascular renal diseases.

It is undesirable to begin any injection treatment without having made a general examination of the patient, and it is advisable to become master of the practical details of one recognised injection method before trying others. The methods which have proved successful in my hands have been set out here.

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QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—At the annual meeting of the Ladies' Association of this hospital, it was pointed out that while the death-rate of women patients among the booked cases is only 2 per 1000, among the emergency cases it is 50 per 1000. The former class consists of women who attend the ante-natal clinic, while the latter are cases sent in at the last minute.

BATTERSEA GENERAL HOSPITAL.—The Duchess of Hamilton has formally reopened, after renovation, the main section of this institution, which is also known as "The Anti-Vivisection Hospital." The chairman, Mr. S. C. Turner, stated that the equipment was worn out, the sanitary arrangements in a bad state, and the kitchen service inadequate, and that a new wing of 50 beds is needed. Last year there were 18,761 casualty attendances and over 2000 cancer attendances.

Special Articles.

ON THE VALUE OF THE STATISTICAL METHOD IN PRACTICAL MEDICINE.

BY PERCY STOCKS, M.D., D.P.H. CAMB.,
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"General impressions are never to be trusted. Unfortunately when they are of long standing they become fixed rules of life and assume a prescriptive right not to be questioned. Consequently those who are not accustomed to original inquiry entertain a hatred and a horror of statistics. They cannot endure the idea of submitting their sacred impressions to cold-blooded verification. But it is the triumph of scientific men to rise superior to such superstitions, to desire tests by which the value of beliefs may be ascertained, and to feel sufficiently masters of themselves to discard contemptuously whatever may be found untrue."
—FRANCIS GALTON.

WE should all be ready to admit that without the aid of mathematics the sciences of physics, astronomy, and even chemistry would be mere accumulations of recorded observations without the possibility of linking these together into an ordered whole; in fact, they would be mere ghosts of sciences emerging from the obscurity of ignorance with no tangible shape or body. But all sciences begin by the collection and recording of observations, and it is very questionable whether any such collection of facts or experiences can attain to the dignity of being termed a science without the continual submission of the laws and theories which they suggest to the cold-blooded process of statistical verification which Galton speaks of.

It is customary to group the sciences into the "exact" sciences and those which are "descriptive," but this distinction can only be a matter of degree and not of kind. The degree of exactness of a science, when we come to think about it, is really a measure of its evolution—that is to say, of the amount of success with which the so-called "Laws of Nature" which make sense out of the happenings of the Universe have been crystallised out as definite and recognisable structures from the liquid mixture we started with. When every constituent in that solution has been isolated and its relation to every other worked out, so that the behaviour of those portions of the Universe we are studying can be predicted with a considerable degree of accuracy under every possible set of circumstances, then and not until then will the evolution of the science which deals with phenomena of that kind be complete or "exact" in the real sense of the term.

No science has yet reached that point, but some have advanced farther on the road to it than others—that is to say, the relations between some of the constituents of the solution are now defined and understood sufficiently to make it possible to predict behaviour in certain circumstances with some confidence. It is *the success of this prediction which is the acid test of the exactness of a science.* There is no a priori reason to suppose that the science of physiology, for example, is essentially any less exact than that of astronomy; the only reason why it seems so is surely because it is so much easier in astronomy to isolate the different units and the different factors acting upon them than in physiology, where we have greater difficulty in disentangling all the multiplicity of influences at work at one and the same time. Not until every one of the factors acting and reacting on each organ of the body has been studied so completely that the behaviour of that organ can be accurately predicted under a given arrangement of these factors can physiology be said to have attained to "exactness."

And here let me remark that we cannot be sure that in this sense any science can ever be perfectly exact, for we have no certain proof that the same set of causes necessarily results always in the same effect; all we know is that in certain kinds of reactions, particularly in physics and chemistry, a very close prediction of the result can be reached by fixing all the known factors. An absolutely accurate agreement with prediction is scarcely ever secured even here—that is, the results of an experiment repeated under the same conditions always show some degree of scatter about a mean value. Though we naturally attribute all such variability of the result from the prediction as due to our not knowing or taking into account all the variables, there is no proof that we could ever obtain perfect accuracy in prediction even if all the variables were known and fixed.

This takes us dangerously near to metaphysics, and we may content ourselves with the statement that at any rate, whatever the ultimate limits are, the exactness of a science increases as we are able to isolate *and measure* the action and reaction of all the various factors concerned in the phenomena with which the science deals. If we admit the crucial test of our ability to predict happenings with given arrangements of causes, then we must admit that without measurements of a multiplicity of factors concerned, most sciences can never be adequately developed, and this is where the study of statistical methods comes to our aid, for statistical methods have been defined as "methods specially adapted to the elucidation of quantitative data affected to a marked extent by a multiplicity of causes."

Statistics and Medical Practice.

How does all this concern the general practitioner? It concerns him vitally, for his whole aim is to so understand all the forces at work in the human body that, starting from any given derangement of the cells or functions in that body, he will ultimately be able, by modifying or helping or checking this force and that force, to arrive at the required result—namely, the perfect health of the body—nay more, to prevent it ever being departed from.

But, it will be said, we are a long way from that and it is rather in the clouds. Let us come to earth then and notice that both diagnosis and treatment as we have to practise it to-day and to-morrow rests on the law of probability, which forms the basis of a great deal of what we know as the theory of statistics. When we started to practise we found to our dismay that not many diseases conformed even approximately to any type described in a text-book, and the process of diagnosis usually consisted in weighing, one against the other, the probabilities that various signs and symptoms arose from certain causes. We may not be conscious of it, but the fact remains that these probabilities are, in the process of our decision, being estimated on the basis of our previous experience or from what we know about the accumulated experience of our predecessors. Thus, assuming that we are making the utmost use of all the knowledge that has been gained, the accuracy of the diagnosis depends upon (1) the amount of previous experience which has been collected together by ourselves and others; (2) the manner in which it has been analysed, defined, and measured, so that any combination of symptoms can be equated to a definite probability of a set of "causes."

Again, when it comes to treatment we are not in the happy position of the physicist who can stake his life on the "certainty" that when he heats a gas it will expand, or of the chemist who can be sure that when he adds a mineral acid to blue litmus it will turn red. What we have to do, since our science is not so precise, is to weigh up the probability that a certain line of treatment will benefit the patient, and this probability is entirely based upon past experience of that treatment in the presence of similar symptoms, and is the more likely to lead to success in proportion to the care and accuracy with which the past experience of it has been analysed. To put the matter in another way, in the practice of medicine we can rarely, if ever, so standardise all the variable factors—even if we knew all about them the human element would usually compel a compromise somewhere—as to be able to promise without

reservation that a certain result will follow a certain plan of action. All we can predict is that if such and such a plan be followed there will be a *tendency* for the desired result to follow. In other words, instead of causation we have to do with *correlation*—that is, however carefully we may fix the conditions there will always be some variability in the result which we cannot control.

It is with the study of this variability and its effect on the precision with which we can predict results in the presence of a multiplicity of factors, of which only a few can be controlled, that a very large part of statistical theory is concerned, and I therefore contend that its importance for the advancement of medicine from empiricism to exactness can scarcely be exaggerated.

Dangers of Hasty Generalisation.

I do not need to quote examples to show how often in the past, over long periods of years, tens of thousands of patients have been subjected to some form of treatment in the erroneous belief that it had been proved to be beneficial, whereas an application of statistical methods at an early stage might have shown that it was useless. It is by this kind of thing that the progress of medicine has been so often retarded and much expensive effort wasted; some medical practitioners attribute the cure of a malady to a particular treatment because they have seen it associated with that event in a few cases; others attribute it to another treatment for the same reason, whereas both are mistaken in having hastened to generalise whilst overlooking the normal expectation of coincidences, which could easily be measured by the theory of probability. Most diseases have been attributed to chills and syphilis on this account.

Quetèlet, the great Belgian statistician, in one of his fascinating Letters on the "Theory of Probability," published in 1846, makes some caustic observations about medical men; thus he writes:—

> "The doctors will excuse me if I retort upon them a little of the scepticism which they generally use pretty freely against statistics. If I suppose that they treat at hazard and without doing good or ill, it will follow from the law of possibility that the greater number will lose but few patients. Some will lose many and keep silence; others will save many, and it is generally these who will raise their voices. In stating the results of their practice, and I think them sincere, they only establish a fact which I willingly accept. Where is the evil? It is found in their sudden abandoning statistics to throw themselves into the domain of conjecture. They do not confine themselves to stating 'I have saved many that were ill,' but they add 'It is because I discovered the cause of the malady that I have learnt how to apply the true remedy.' But they do not in any way prove the connexion between the effect and the pretended cause; this, however, is what they should do."

I am afraid we must admit that his words are not quite devoid of sting to-day. At any rate it is still possible for the editor of a leading newspaper to write of us (May 26th, 1928)—let us hope it is mostly in jest:—

> "All I can say is that the faith of doctors in doctors arouses my stupefied admiration. Their gift of superstitious credulity makes me gasp with envious reverence. If I could believe in all they believe in I could believe in anything."

Statistics and Public Health.

The general principles I have endeavoured to outline apply still more emphatically to the domains of public health, where the care of the individual gives place to the care of a population. We are now so accustomed to think of birth-rates and death-rates as definite entities that it comes as a shock to realise that the idea of the stability of statistical ratios is a relatively modern conception; in fact, it may be said to have originated with John Graunt, who published in 1665 his "Observations on the Bills of Mortality," a work of great historical interest to all students of vital statistics. By his study of the records of burials and christenings in London, Graunt succeeded in demonstrating some of the most important facts in vital statistics, which were quite unknown—viz., the regularity, when studied in mass, of vital phenomena such as accidents, deaths, and other social events, the relatively high mortality-rate in infancy, the greater mortality in towns than rural areas, the excess of male over female births, and the roughly equal numbers of the sexes in the population.

Once it was realised that births and deaths followed definite laws of probability in the mass, the way was open to all kinds of advances in social science; for example, the evolution of the principle of life insurance quickly followed, with the foundation of some of the great assurance companies. Along other lines Graunt's work was followed up by a succession of workers down to Dr. Farr, who built up our national system of vital statistics. It has been truly said that there could not have been a Public Health Act without vital statistics, and that almost every useful advance which has been achieved since in the direction of improving the health and well being of the nation has resulted from the collection of statistical data, scientific treatment of them, and a correct interpretation of their significance.

Value of Accurate Death Certification.

It is therefore surprising how slight an interest the average medical man in practice takes in such work, for the foundations of our national mortality statistics, which have been a pattern to the world, were laid by Dr. Farr without the aid of any Public Health departments and almost entirely upon the information regarding deaths furnished by medical practitioners throughout the country, and it is still true that through the medium of the certification of deaths and notification of infectious diseases the general practitioner is responsible for almost all we can learn regarding the principles which underly the rise and fall of epidemics and the incidence of other important diseases such as cancer.

It is not necessary to stress the fact that the value of any such system of national vital statistics, and of the conclusions which can be drawn from them, depends ultimately on the amount of care which each individual medical man devotes to making as accurate a return on the death or notification certificate as it lies in his power to do, for although it may be true that certain kinds of chance errors tend to cancel out in the aggregation of large numbers, it is also true that the massing together of careless observations could scarcely lead us anywhere. This is especially true in regard to cancer at the present moment, for the statistical method is as likely to unearth a clue to its causation as any method which is being employed; hence the importance of endeavouring to secure the utmost possible accuracy in death certification of this disease, and to this all such considerations as the private prejudices of relatives of the deceased should give place. It should surely give us serious cause for thought that the Registrar-General should have to form the conclusion that the very large local variations in registered cancer mortality in England and Wales which remain after allowing for all other known factors may be attributable to differing accuracy or faithfulness with which medical men in different districts enter cancer as a cause of death on death certificates, a view with which I personally do not agree though I admit there is much to support it. That it is at least of some importance cannot be doubted. Here then is a great service which the medical man can render to the advancement of knowledge in the ordinary course of his practice.

Team-work in Cancer Research.

But there is another form of service which he can render, one which must mean a little sacrifice of time and energy without compensation other than the satisfaction of having tried to make his unique opportunities of observation useful to those of his colleagues who, like himself, are honestly trying to establish the causes of disease and the best means of treatment, but by methods with which he may be frankly bored. I refer to the voluntary participation in such inquiries as that on the treatment of varicose

ulceration now being carried out by the British Medical Association. It must necessarily be that some inquiries of this kind, however carefully planned, may lead to nothing after entailing much labour to a lot of people, but that is true of all research work, which has to record many failures to each success. And it is also true that we have a natural prejudice against the filling in of any more forms than the law compels us to do. Nevertheless there are great possibilities in such team work, and I make no apology for the appeal which appears in the correspondence columns of to-day's issue for offers of help in furnishing certain information regarding cancer cases. Statistical research of this kind will doubtless offer few attractions to those who find their complete satisfaction in the immediate results of a surgical operation, but to those who look ahead to a time when preventive medicine will have rendered most surgical operations unnecessary. I hope that in this brief article I may have conveyed the impression that there are some glimmerings of sense in it, and that it is quite capable of suggesting new lines of progress or even of leading directly to actual new discovery.

CHRONIC ARTHRITIS IN ADULTS.

DIAGNOSIS AND TREATMENT.

THE following is a summary of certain sections of Dr. Alison Glover's report [1] to the Ministry of Health. It records some of his conclusions on matters of everyday importance, and is intended also to draw attention to the valuable source of information which he has placed at the disposal of practitioners and public authorities.

Diagnosis.

When a patient presents himself with any symptom or sign suggestive of chronic arthritis the practitioner has two clear and urgent duties; the first the attempt to distinguish the variety of arthritis and the stage to which it has progressed; and the second, even more important, to begin that determined search for an infective focus in which later he may have to invoke the specialist's aid. It may be impossible to distinguish the variety or type of arthritis, but an attempt to do so should result in a complete record of the case as first seen—a record not confined to the joints, but envisaging the general condition of the patient as well. A scientific classification of the many forms of chronic arthritis is not yet possible, but various forms may usefully be distinguished (see table).

A certain proportion of cases will not fall into any of the groups indicated by this table, and it does not, of course, include those relatively uncommon specific forms of chronic arthritis in which the causal agent is more or less known—e.g., those following scarlet fever, dysentery, undulant fever, meningococcal infection, gonorrhœa, tuberculosis, hæmophilia, and syphilis, or the neuropathic (Charcot's) form of the disease.

Focal Sepsis.

Even in gout, the most undoubtedly metabolic disease of the group, an infective focus may play an important part in precipitating attacks, and it should always be looked for. The seat of infection may be the genito-urinary tract, appendix, bladder, intestinal tract, nasal sinuses, middle ear, tonsils, or lastly and most often, the teeth or gums. In the great majority of cases in which focal infections are regarded as causing chronic arthritis the infecting agent is thought to be a streptococcus, usually of the *viridans* group. Many other organisms, however, can give rise to the condition.

In some of the severest cases of rheumatoid arthritis, especially in young women, no focus can be found after the most careful search; moreover, infection is probably present in the mouths of 75 per cent. of the population over 40 who remain free from arthritic symptoms. Nevertheless the theory of focal sepsis has brought fresh hopes into the outlook upon chronic arthritis, and rightly considered, early acted upon, and soberly applied, it greatly improves the prognosis of at least half the cases.

Dental sepsis is of two kinds: (*a*) "open," in which the organisms and their toxins can escape into the mouth; and (*b*) "closed," in which it can escape only into the surrounding bone, the blood, or the lymphatics. Often both types are present together, and opinions differ as to which plays the greatest part. In open sepsis the area of absorption may be extensive and the dose of toxins large; secondary infection of the naso-pharynx and intestinal tract may follow. Caries by itself scarcely seems important from the point of view of arthritis, and it is the various conditions covered by the term "pyorrhœa" which are the chief open types of dental sepsis which cause arthritis.

Pyorrhœa is generally taken to mean a form of chronic periodontal disease characterised by discharge of pus around the teeth. The chief signs are gingivitis of the interdental papillæ, pockets between the teeth and gums—especially between the teeth—absorption of bone, recession of gums, deposition of hard tartar beneath the gum margins, discharge of pus from the pockets and loosening of the teeth. Many mouths show gingivitis with deposition of soft tartar on the lower front teeth and upper molars, but no pockets. These cases are rare in true periodontal disease, but are mainly due to dirt and neglect, and improve rapidly with treatment.

Closed sepsis, due to the death of pulps and the decomposition of the organic contents in the root canals, with escape of organisms and toxins at the root apex is, from the point of view of arthritis, even more serious. Often it can be detected only by radiography, for it may be associated with clean gums and perfectly healthy looking teeth. Crowned teeth are especially liable to apical infection.

Whilst the search for a septic focus should be very thorough the dental treatment adopted should as a rule be cautious and gradual, only thoroughly incriminated teeth being removed at first. Wholesale extraction is seldom necessary and can only be justified by exceptional circumstances. In view of the immense number of persons who have much dental sepsis of all kinds and yet escape arthritis it is clear that the normal human body has to have a high resistance to the organisms and their toxins.

Tonsillar sepsis, of supreme importance in acute rheumatism, comes only second to dental sepsis in relation to chronic arthritis. The septic tonsil responsible is often small and comparatively innocent in appearance. It is sometimes retracted, and the lower pole is commonly the more infected. When such tonsils are found in a patient with chronic arthritis their enucleation is essential, nothing short of this operation being worth while.

Nasal sinusitis may be secondary to dental infection. It sometimes gives rise to no local symptoms, being only demonstrable by transillumination, by radiological methods, or by puncture, the last giving the most conclusive evidence. The slighter latent forms of sinusitis are apparently more likely to give rise to arthritis than the severer forms. Willcox points out that although adequate surgical treatment is essential, it is well to proceed cautiously, and a sufficient interval should elapse before operation on other foci which may be coexistent, if excessive auto-infection is to be avoided.

Intestinal infection is usually secondary to oral or dental sepsis, often being associated in rheumatoid arthritis with achlorhydria. The colon is especially implicated, though the signs of any active colitis are generally absent in chronic arthritis, other than the dysenteric variety. Treatment should aim especially at the correction of stasis, and the Plombières douche or colon lavage is now considered one of the most efficient means of treatment. It is not, however, free from risk and should be given under continuous expert supervision, each case being considered

[1] Ministry of Health. Reports on Public Health and Medical Subjects, No. 52. Chronic Arthritis, with special reference to the Provision of Treatment. By J. Alison Glover, M.D. H.M. Stationery Office. Pp. 103. 1s. 6d. (See THE LANCET, May 12th, p. 974.)

separately. Some authorities still mainly use intestinal disinfectants administered by mouth.

The *genito-urinary tract* is a common focus of infection, and chronic arthritis is sometimes due to secondary invaders such as streptococci which have followed upon gonococcal infection. Inflammation in the posterior urethra or prostate, vesiculitis, and endocervicitis may also be important.

Respiratory infection appears to be a source of infection in some cases, whilst *cutaneous infections* may also be responsible.

Vaccines.

Vaccine therapy will be unjustly discredited if vaccines are administered while the patient still has in his body a removable focus, not removed, or one that is capable of drainage, undrained. It will also be discredited if employed too late in the disease—i.e., when the joints are fixed and deformed. In the early stages of chronic arthritis, particularly of the rheumatoid type, the skilful use of autogenous vaccine of *Streptococcus viridans*, grown, say, from the granuloma at the root of an infected molar, may be of great therapeutic value. It is essential, however, especially in the frail subjects of rheumatoid arthritis, to start with very small doses and very gradually increase them, avoiding either general reactions or signs of reaction. As many as 15 or 20 doses may be required, the intervals being at first five days, and later up to ten days. The vaccine should never be administered until the reaction from the previous dose has entirely subsided, and if a reaction with pyrexia and general malaise occur the interval should be increased and the subsequent dose halved. Too long an interval is far better than one too short.

Various forms of stock vaccine may be employed when no infective focus has been found. Injection (intravenous, intramuscular, or subcutaneous) of such substances as typhoid vaccine, proteases, sera, colloidal metals, and milk may be employed to produce a non-specific reaction with leucocytosis, high temperature, rigors, and shock. This treatment has met with considerable success, especially in rheumatoid arthritis in which no very definite focus of infection could be detected. The value of the treatment varies inversely with the duration of the disease and other less easily measured factors of resistance and hidden sepsis. Relapse is not uncommon, and some writers reserve the method for patients whose general condition is good.

Diet and Drugs.

Diet is a very important part of the treatment of chronic arthritis. Under-nourished patients with atrophic rheumatoid arthritis of the Poncet type should take a full and generous diet, rich in animal fat, and similar to that used in tuberculosis. The correction of their hypochlorhydria is desirable to this end. On the other hand, for over-weight patients with menopausal arthritis, stout patients with osteo-arthritis or gout, and indeed for most osteo-arthritics, a reducing diet (low caloric feeding) is indicated.

DIFFERENTIAL DIAGNOSIS OF ARTHRITIS.

—	Rheumatoid arthritis.	Osteo-arthritis.	Climacteric arthritis.	Gout.
Usual mode of onset	Sometimes acute; often with a febrile attack of some length.	Insidious afebrile.	Insidious afebrile.	Acute febrile.
Usual age of onset	25–40.	40–55.	45–55.	35–50.
Sex incidence	At least three times as common in females.	Approximately equal.	Females.	30 to 50 times as common in males.
Bilateral symmetry	Usually more or less bilaterally symmetrical.	Often asymmetrical.	Usually both sides.	Usually asymmetrical.
Initial changes	At first periarticular, accompanied by much fibrositis.	Chiefly endarticular at first.	At first confined to synovial membrane.	At first confined to articular cartilages.
Movement	Early considerable limitation.	Apart from sudden "locking" little interference with movement.	Not marked at first.	Little limitation after recovery from acute attack in early stage.
Wasting of limbs	Early and marked.	Only in late stages, then little.	Only in late stages.	Only in late stages.
Joints first affected	Smaller joints first affected; usually first and second phalangeal.	Larger joints affected first; most frequently commences in one knee.	Almost always the knees are affected first.	Almost always metatarso-phalangeal articulation; great toe affected first.
Appearance of swelling of joints	Fusiform.	Gnarled irregular.	Fusiform.	Irregular.
Ankylosis	Fibrous or bony common.	Rare.	Rare.	Rare.
"Jaw-neck" syndrome	Often present at early stage.	Absent.	Absent.	Absent.
Radiograph—				
(1) Early	(1) No bony or cartilaginous change.	(1) Slight lipping.	(1) No bony change.	
(2) Late	(2) Diminished density of bones; outline fairly regular.	(2) Hyperostosis; outline of ends irregular; osteophytes; narrowed articular cartilage; space.	(2) Osteophytes in about 25 per cent.	(2) Somewhat resembles osteo-arthritis, deposits of sodium urate seen as light spots.
Patient's general condition	Thin, pale, waxy; looks ill and toxic.	Often hale and well-nourished.	Usually overweight; loss of muscle tone; "girdle-obesity."	Florid, usually over weight, often tophi.
Blood picture	Slight anæmia; leucocytosis; relative lymphocytosis; low suspension stability.	No anæmia; marked leucocytosis; suspension stability less lowered.	Usually no anæmia.	No anæmia; moderate leucocytosis during attack; marked increase in sinking rate during the attack; normal in intervals.
Achlorhydria	Frequent.	Absent.	Absent.	Absent.
Basal metabolism	Often lowered.	Generally normal.	Often lowered.	Usually normal.
Blood uric acid	Generally normal.	Often high.	—	High.

A. G. Watson makes the useful suggestion that if dessert be served at the beginning of meals rather than the end it reduces the total intake of food.

Small doses of thyroid extract are undoubtedly often effective in menopausal arthritis, and apparently mixed glandular extracts may have some tonic effect in other forms of the disease. Intestinal antiseptics—guaiacol carbonate, guaiacum and sulphur, dimol, and colloidal iodine—are often used with advantage. Patients with rheumatoid arthritis and hypochlorhydria should be given dilute hydrochloric acid, ℿ20, well diluted after food. Arsenic, iodine, and potassium iodine may be useful. Liquid paraffin combined with agar may be used to improve the action of the bowels.

Physical Treatment.

Once the focus of infection has been dealt with the object of subsequent treatment must be to stimulate the defensive mechanism of the body. Vaccines or non-specific proteins will produce hyperæmia, inflammation, and fever, and physical methods, especially heat, are capable of the same effect. To heat the actual part or joint there is the choice of diathermy, local mud and peat packs, immersion of limb in molten paraffin wax, radiant heat, hot water, hot water vapour, or hot sand. Physical therapy also includes

massage and manipulation and various forms of local treatment.

Balneotherapy.—Water may have various important reactions upon the body—mechanically by its invaluable support in exercising stiff and wasted muscles; by the stimulus of its impact, as in douches or whirlpool baths, or by an action attributable to substances which it holds in solution or suspension, salt, sulphur, CO_2. But its main therapeutic effects in chronic arthritis are those which depend upon its temperature. Hot baths, like protein shock, have a local reaction and a general reaction. The local reaction is a hyperæmia, whilst the general reaction is a rise in the temperature of the skin, an increase in the peripheral circulation, owing to enlargement of the calibre of the surface blood-vessels, and a quickening of metabolism. Many patients cannot take general baths, and are sufficiently treated by local heat and manipulation. Heat applied to a limb as in the whirlpool bath, at 45° C., very greatly increases the local circulation, and the blood capillaries may be so dilated that the venous blood becomes arterial in character. The application of cold following the application of heat (thermal contrast) is another method of stimulating reabsorption of arthritic exudates.

Balneotherapy is of great service in almost all forms of chronic arthritis for the following purposes:—

1. For stimulating the immunising mechanism and for aiding the absorption of inflammatory products—action resembling to some extent that of protein shock.
2. For the restoration of the cutaneous reaction, and for promoting elimination through the skin (diaphoresis), and in through the kidneys (diuresis).
3. For the relief of pain.
4. For aiding (by the relief of muscular spasm and by obviating gravity) the re-education of function in joints and muscles stiffened or deformed by previous inflammation.

The second of these functions—the restoration of cutaneous reaction—is of great importance.

A healthy skin has many functions besides its protective action. By the ingenious mechanism of its capillary circulation (in which it is said one-third of the blood can be accommodated when fully dilated) it is the principal organ for regulating temperature, and for the conservation or loss of heat; it is an important agent in elimination of waste and toxic substances, and, in addition, recent work has made it appear in the new light of a great gland with an internal as well as an external secretion. The skin has a hard time in civilised life, and in patients with rheumatoid arthritis obvious signs of defective skin action are seen; beauty is lost, the skin is pale, sallow (or even pigmented) and unattractive, the mechanism of heat regulation seems jammed on the "off" side (to borrow a railway carriage metaphor), the surface temperature is low, the skin feels cold, and unnatural sweat comes from palms and soles. The patient has lost the glow of health and feels miserably cold with the shiveriness of toxæmia. Balneotherapy attempts to encourage and re-educate the patient's skin back to the "full flush" of health.

Balneotherapy is rather an art than a science, and it is almost impossible to give precise indications for its use. In general, however, baths and other forms of physical treatment are contra-indicated in the active febrile stages of any arthritis, whilst if a patient has a removable focus of infection it is bad practice to commence balneotherapy or physical treatment before that focus be removed, save only perhaps for the relief of pain, and in certain somewhat rare cases where it is judged that the patient's resistance has been so lowered that physical treatment should come first, with a view to increasing the resistance sufficiently to allow the focus to be safely removed. Two or more forms of physical treatment administered together are more likely to do good than if they are given separately.

Diathermy is a form of heat which is of great service, and is increasingly applied both to the joints themselves and in treating foci of infection.

Facilities for Treatment.

Hydrological methods have their best hope of success when the patient can devote his whole time to the treatment in favourable surroundings—e.g., at a spa—with the advantages of change of air and regimen, and sometimes with the additional assistance to be obtained from natural mineral waters. Many forms of hydrological treatment can, however, be given with great benefit to patients using ordinary waters at hospitals other than those at the spas, and at out-patient clinics. Their employment requires special experience, a specially trained staff, and suitable equipment.

The report concludes, after references to surgical measures, with a section on the facilities for treating adult rheumatic disorders in this country, including a brief account of the spa hospitals. The need for further provision is emphasised, and recommendations are made concerning the establishment of physical treatment centres and "arthritis units." An appendix on the treatment of rheumatism by physical methods in Germany is contributed by Dr. Fortescue Fox and Dr. Margarethe Mautner.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Local Appointments.

THE medical profession in the Irish Free State is much interested in the Local Authorities (Officers and Employees) Bill introduced to the Dail last week by Mr. de Valera. The object of the Bill is to amend the Local Authorities (Officers and Employees) Act of 1926 in one particular. That Act provided that appointments under local authorities should be made on the nomination of a central board set up by the Government, the Local Appointments Board, only one nomination being made in each case. Mr. de Valera proposes that instead of naming one person to be appointed the Board should submit a panel of names from which the local authority should choose one. His argument was that the local authority should not be deprived of all power of choice in the selection of their officers. In opposing the Bill Mr. W. Cosgrave, President of the Executive Council, said that the Act had been introduced for one main purpose—to secure in the appointment the best qualified persons. Under the Bill now before the House local authorities were to be invited to ask for a panel of not less than three. This would mean that canvassing and local influence would be resurrected. The purpose of sending down more than one name could only be to invite the local authorities to appoint someone other than the best qualified candidate. He further stated that the standard of applicants for the various posts had been good. Mr. T. J. O'Connell, the leader of the Labour Party, also opposed the Bill. He said that appointments, whether made under the central government or under local authorities, and the method of making them, should be above party. He asked that there should be an inquiry into the working of the original Act, subsequent to which there might be, if necessary, agreed legislation. Mr. E. Blythe, Minister for Finance, agreed that an inquiry into the working of the Act might be extremely useful. One of the results of the present system was that there had been great numbers of candidates coming forward, which showed that they had confidence in the methods by which they could be appointed. He saw no reason why officials should be chosen by a local authority which they had to serve under, just as he saw no reason why civil servants should be chosen by a Minister, because officials were no more the servants of council or local authority than civil servants were the servants of the Minister. Dr. T. Hennessy said that before the passing of the Act it often happened that a candidate—a medical candidate—passed his final examination one day, had his degree conferred, and then went down the day afterwards and got elected to a position. Professional experience had mattered little so long as he had influential friends enough on the local board. Dr. Ward said that the corruption practised by public bodies in the

country had been put to shame by the corruption practised at headquarters. The difference was that when there was a big case of corruption in the country it was exposed, but the corruption practised at headquarters did not see the light of day. To which Mr. R. Mulcahy, Minister for Local Government and Public Health, replied that if there were details to substantiate the charge that the work of the Local Appointments Commission was tinged with corruption, those details should be given.

Medical opinion in Ireland is strongly against any weakening of the Act of 1926. In the opinion of many that Act was the greatest reform in local administration in the history of the country. It ensured that the appointment of local officials should be made by an independent body, assisted by experts, and thereby it ensured the gradual establishment of an efficient local government service. Medical men realise that appointments are now given on merit and not on grounds of family or political influence, and there is no doubt that the standard of entrants to the public medical service is improving. The only further change desired by medical opinion is one suggested in the debate by Mr. O'Reilly, an Opposition Member, —namely, the conversion of the local government service with a civil service. The medical profession has long been asking for a National Medical Service.

Royal College of Surgeons in Ireland.

The annual election of officers and council of the Royal College of Surgeons in Ireland took place last week. Mr. T. E. Gordon, who has been elected President, is professor of surgery in Trinity College and senior surgeon to the Adelaide Hospital. He served in the war at the "Dublin" (83) Hospital, with the rank of Lieut.-Colonel. Mr. R. A. Stoney, the new Vice-President, is senior surgeon to the Royal City of Dublin Hospital. He served in the war in the French army, with the rank of Médecin Majeur, and is a Chevalier of the Legion of Honour.

"FINCLURE."

"Finclure, Cent. London" is the telegraphic address of the Surgical and Medical Protection Union of London, Ltd., a body which is seeking the support of the medical profession on grounds which are set out in the following circular, placed in our hands by a correspondent:—

May, 1928.

DEAR SIR,—The attention of all Surgical and Medical Practitioners is urgently directed to the great risks which they incur by remaining outside the Union. The number of claims is greatly increasing, and it cannot be too clearly emphasised that any member of these professions who fails to enrol as a subscriber is assuming very serious risks, which no prudent person would accept. The annual subscription is £1 per annum, *and to practitioners who are transferring from another Defence Society, the subscription is* 15*s.*, and will be retained at that sum for at least three years. No entrance fee is payable on admission. The subscription includes an insurance, *unlimited in amount*, and all costs, in cases which may be raised against a Subscriber, in which he may be found liable in damages. In view of the verdicts of juries in such cases as *Harnett* v. *Bond and Adams*, it is essential that full protection should be given against any award which may be made. This Union undertakes to defend their Subscribers against all claims which may be made against them, in respect of their professional work, including liability, not only for the acts of the Subscriber himself, but of all assistants and dispensers in his employment, and of other practitioners acting on his behalf. A separate indemnity contract is delivered to each Subscriber in his own favour.

In addition to the great security which is afforded by joining the Union, various advantages are offered, the particulars of which are attached hereto.

A form of application is sent herewith.

Yours faithfully,
W. FINDLAY,
Secretary and Treasurer.

This circular letter emanates from Atlantic House, 45, Holborn Viaduct, London, E.C., and apparently from a small office on an elevated floor of the building, but there is a second address on the letter, indicating that the Union has a Scottish department located at 86, St. Vincent-street, Glasgow, where the accommodation may be more in keeping with the promises of the secretary and treasurer of the new activity. We do not know if Mr. W. Findlay is or is not the same person who has figured in the "Handbook for Recently Qualified Medical Practitioners" as secretary of the Medical and Dental Defence Union of Scotland, Ltd., 155, St. Vincent-street, Glasgow.

The following are the particulars of the advantages of joining this movement which are set out in the circular:—

1. Subscribers have an unlimited cover for damages which may be awarded, and an individual Indemnity Contract is delivered to each Subscriber when joining.

2. All cases in which the Subscriber is attacked professionally are taken up by the Union and defended, *without any discretionary power to refuse defence.*

3. Special "Surgical and Medical" Insurance Policies can be obtained through the Union for life, personal accident, motor car, sickness, and other risks. Special Insurance arrangements are offered making provision for the Widows and Children of Surgical and Medical Practitioners in the event of death. The Insurance offered is by one of the best Insurance Companies. The terms offered are exceptionally favourable, and, owing to the privileges which a Union is able to obtain, much more advantageous than can be obtained otherwise. These "Surgical and Medical" Policies can only be issued to Subscribers to this Union.

4. Subscribers are entitled to obtain legal advice on all matters relating to their professional work direct from the Solicitors and Counsel, and complete confidentiality is thus secured. Subscribers may rely on the fact that their private affairs on the matters regarding which they desire to be guided will be entirely free from the knowledge of anyone but the Solicitors and Counsel (where the latter require to be employed).

There are also set out in this communicative circular "other facilities available to subscribers," the terms for which can be obtained on application to Mr. Findlay. These include the buying and selling of practices and houses, with arrangement for financial help, the drawing up of agreements for partnerships and assistancies, the preparation of income-tax returns, the audit of professional books, and advice on investments.

Upon the advantages set out above the following comments seem fair:—

(1) An individual indemnity contract is of no use if he who offers it cannot fulfil the terms. (2) Without a discretionary power to refuse defence, Mr. Findlay will be compelled to mediate legally in cases where he will be forced to meet damages and costs in actions which should never have been undertaken—often for professional reasons. (3) The Medical Insurance Agency is already in a position to obtain favourable terms for insurance of all sorts for medical men, while paying substantial sums in support of medical charities. (4) It will be noted that solicitors other than Mr. Findlay are going to give legal advice on the conduct of medical practice with complete confidentiality; is this funny promise a suggestion that solicitors and counsel are going to give their assistance gratuitously, or what is implied by the word "entitled"?

The medical profession may wish to be guided in their decisions as to reply. The title of the new association is very reminiscent of the titles of the two well-known and substantial medical defence societies already discharging with increasing efficiency many of the responsibilities which Mr. Findlay is ready to assume. The offer to do the work of these societies and much more than their work for 15*s.* per annum instead of £1 per annum can only be worth considering if Mr. Findlay can prove the present command of large capital. No directors are mentioned and no trustees, and there is no guarantee that Mr. Findlay possesses any resources from which to meet liabilities rightly described by himself as "unlimited in amount." Thus "the great security . . . afforded by joining the Union" is obviously absent, and we cannot recommend our subscribers either to pay an annual fee of £1 in response to Mr. Findlay's invitation, or to desert either of the well-known medical defence

societies, whose guarantees and financial position are unimpeachable. Mr. Findlay's backing may be of the most substantial character, but before subscriptions are invited the nature of that backing should be disclosed.

Public Health Services.

MENTAL HOSPITAL REPORTS.

THE *Middlesbrough Borough Mental Hospital* housed 459 patients at the end of last year. The recovery-rate for 1927 was 62·2 per cent., the highest that has ever been attained. The death-rate was 8·51 per cent.; of the 40 patients who died 10 were general paralytics. Parole was granted to 50 patients, and 74 per cent. were usefully employed daily. There was rather a high incidence of severe epilepsy—12 per cent., but the tuberculosis-rate was low, 1·96 per cent., and the general health good. Time is beginning to tell on the fabric of the building, and the telephone, fire alarm, and heating system demand renewal. Two nurses obtained their certificate with distinction, and 12 more passed the preliminary examination.

The Report of *The Lawn*, Lincoln, is the last from the pen of Dr. Jean Shortt, whose retirement we recorded early in the year. There were 60 patients under care and 12 in residence on Dec. 31. During 1927 there were 6 deaths, 2 resulting from an influenza epidemic in the spring. Thirteen of the 29 patients admitted during the year came as voluntary boarders. Steady progress is being made in renovating and improving the building. Only one patient is on parole, but 16 walk or drive out attended. The report is illustrated by photographs of the grounds, and the usual statistical tables are appended.

The 114th annual report of the *Glasgow Royal Asylum* contains the abstract of a speech by Prof. J. Glaister at the annual meeting, urging increased study of psychiatry by doctors and nurses, and the Physician-Superintendent's report for 1927. There were 518 patients in the hospital at the end of the year, and over 60 per cent. of the admissions during the preceding 12 months were voluntary. This is a record of which the institution may well be proud. The death-rate was 11·2 per cent., a high figure which was accounted for by an obscure streptococcal epidemic which was reported to the Public Health Department. The operating theatre and dental room are in constant use, and a number of improvements have been effected in the structure of the building. An increase of dietary has been greatly appreciated. Occupational therapy has been considerably developed, and the Instructress presents her first report this year. Rug-making is chiefly favoured by the men patients, and sewing, knitting, and raffia by the women, but many other industries are at work. The visiting commissioner comments on the absence of noisy excitement and of destructive tendencies and depraved habits, and ascribes it to the occupational therapy department. The dentist reports that he saw 269 patients during the year and carried out 245 extractions with local anæsthesia. Very few have refused his services. The Medical Superintendent emphasises the importance of applying psychiatry to the problem of delinquency and of extending the realm of preventive psychiatry.

The *Cumberland and Westmorland Mental Hospital* housed 864 patients at the end of 1927, the number of admissions during the year being considerably below the pre-war average. Most of the patients had a very poor prognosis, reflected in the recovery-rate of 29·8 per cent. The death-rate was 6·9 per cent., and with the exception of tuberculosis and influenza there was no infectious disease. A cinematograph and refrigerating plant have been installed, and the visiting commissioners urge the remodelling of the administrative block. The dentist visits regularly. Only 13 male and 6 female nurses are certificated or registered as mental nurses. The medical superintendent reviews the progress made in the hospital during the last 30 years. The improvements in the building include a new sewage system, verandahs to each sick ward, a recreation hall, and electricity.

The report of the *Cheshire County Mental Hospital* at Parkside records an active year. There were 2394 patients in the institution on Dec. 31st, four over the normal accommodation. The overcrowding is on the male side and no solution of the difficulty has yet been found. The total number of admissions was the smallest on record since 1902, and the decrease is again among men, although the female admissions were also abnormally few. Of the 184 admissions there was no prospect of recovery in 88, so that the recovery-rate of 36·4 per cent.—a record for the hospital—is very creditable. The death-rate was also a record: 5·3 per cent., and autopsies were made on 79 per cent. of cases. The treatment of general paralysis by induced malaria continues to give satisfactory results, and a special report on it is appended. Of the 29 patients treated 7 have been discharged, 7 are dead, and 14 are undergoing remissions. Only 1 discharged patient has returned. Ultra-violet rays have proved so beneficial for mental and physical disorders that two more rooms have been equipped with mercury-vapour lamps. Radiant heat, balneotherapy, and general massage are also used. Endocrine extracts have not yielded any appreciable effects. Two cases of dysentery occurred and there was an epidemic of influenza and some pneumonia. Otherwise the general health maintained a high level. Fifty-four women and 20 men have been employed in handicrafts, and 50 more patients have been induced to take up games. A series of six monthly meetings was arranged during the winter months for medical practitioners in the area from which patients come. The programme was an attractive one, and in this activity Parkhurst sets an example that other institutions might well follow. Short reviews of work on 200 cases of puerperal insanity and on the treatment of insomnia are printed in the report, and show that the research spirit is active. The interesting conclusion of the latter investigation is that a cup of hot cocoa is more effective than nightly hypnotics. Eleven nurses and two attendants obtained their certificate during the year, and, as we have already noted, one member of the nursing staff received the M.B.E.—the first honour conferred on a purely mental-trained nurse.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 2ND, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 286 (last week 258); scarlet fever, 1585; diphtheria, 887; enteric fever, 60; pneumonia, 1182; puerperal fever, 52; puerperal pyrexia, 100; cerebro-spinal fever, 9; acute poliomyelitis, 3; acute polio-encephalitis, 3; encephalitis lethargica, 28; dysentery, 13; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 26 counties: London, 5; Bedford, 1; Buckingham, 5; Chester, 1; Derby, 6; Durham, 62; Gloucester, 1; Hertford, 1; Lancaster, 15; Leicester, 1; Lincoln, parts of Holland, 7; parts of Kesteven, 1; parts of Lindsey, 2; Middlesex, 3; Norfolk, 8; Northumberland, 15; Nottingham, 9; Oxford, 1; Stafford, 31; Warwick, 2; Yorks North Riding, 6; West Riding, 59; City of York, 2; Brecknock, 3; Glamorgan, 17; Monmouth, 22.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on June 5th-6th was as follows: Small-pox, 33 under treatment, 8 under observation, scarlet fever, 1702; diphtheria, 2049; enteric fever, 31; measles, 906; whooping-cough, 153; puerperal fever, 18 (plus 18 babies); encephalitis lethargica, 69; poliomyelitis, 1; "other diseases," 25. At St. Margaret's Hospital there were 14 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London, there was no death from small-pox, 6 (0) from

enteric fever, 56 (24) from measles, 7 (1) from scarlet fever, 39 (6) from whooping-cough, 34 (8) from diphtheria, 38 (8) from diarrhœa and enteritis under two years, and 46 (8) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Ealing 2, Portsmouth 1, Southampton 1, Norwich 1, and Bath 1. Of the 32 fatal cases of measles outside London, 8 were reported from Liverpool and 3 each from West Ham, Ipswich, and Birmingham. Of the 33 fatal cases of whooping-cough outside London, 5 were reported from Birmingham, and 3 each from West Ham, Liverpool, and Gateshead; while Glasgow showed 9 deaths for the same week.

The number of stillbirths registered during the week was 273 in the great towns (corresponding to a rate of 44 per thousand live births) including 48 in London.

Correspondence.

"Audi alteram partem."

THE WAR EMERGENCY FUND.

To the Editor of THE LANCET.

SIR,—The activities of the committee of this Fund have now come to an end. The first case of distress was relieved in 1915 by the Royal Medical Benevolent Fund, but it was soon found that a special sub-committee—the War Emergency Fund Committee—had to be constituted, and that an appeal for larger funds was necessary. The War Emergency Fund was instituted to afford assistance to those members of the profession who, in consequence of having joined the medical service of the Navy or Army, found themselves in temporary financial difficulties. The late Sir Alfred Pearce-Gould, who died in 1922, was the first chairman. Amongst those who served on the committee were: Sir William Lister, Mr. T. P. Legg, Dr. Andrew Elliott, Sir D'Arcy Power, Dr. Charles Buttar, Sir William Willcox, Sir Charters Symonds (hon. treas.), and Dr. Newton Pitt (hon. sec.).

Applications for assistance were received from 297 medical men; of these 160 cases were relieved, and the other 137 cases were either ineligible or were assisted in other ways to secure the help they required. From 1920 most of the applications made were for assistance towards educational expenses. Assistance for education has been given to 75 boys and 30 girls, who have attended the following schools:—

Taunton, Bournemouth, Cranwell, Harlow, Nottingham, Tunbridge Wells, City of Oxford School, Westminster, Durham, Malvern, Wellingborough, Southbourne, Edinburgh, Bromsgrove, Purley, Hunstanton, Woolwich, Epsom, Kelly, St. Paul's, Colet Court, Tonbridge, France, Denstone, Cardinal Vaughan's School, St. Peter's York, Sunderland, Ampleforth, Malton, Wimborne, Blackheath, St. Anne's, Holt, Bedford Training College, Bury, Alderley Edge, Froebel, Littlehampton, University College, St. Bart.'s, St. Mary's, and Guy's.

Grants have also been made towards insurance, rent, maintenance, debts, surgery requisites, help towards the purchase of practices, examination fees, and the like. The total sum paid in aid of education of the children of these medical men was £18,946 9*s.* 10*d.* The total sum raised was £32,458 16*s.* 8*d.* The grants given in successive years were:—

	£	*s.*	*d.*		£	*s.*	*d.*
1917	290	4	0	1924	2,470	17	0
1918	697	16	2	1925	1,778	4	2
1919	7,552	15	2	1926	291	4	4
1920	5,926	17	6	1927	85	0	0
1921	5,622	14	5				
1922	6,204	17	9		£34,876	14	11
1923	3,956	4	5				

This letter is not written primarily to acquaint the profession of the way in which the fund has been administered, but to tell the story of the wonderful, long-continued, unobstrusive, self-sacrificing, labours of two members of the committee who investigated, visited, interviewed, and corresponded with applicants for grants. Their recommendations were almost invariably accepted by the committee, and without their aid and advice the Fund could not have functioned without making many mistakes. These facts, we think, should be known.

The whole profession will be proud to learn of the splendid selfless service to their comrades in distress rendered by Sir Charters Symonds and Dr. Newton Pitt.

We are, Sir, yours faithfully,

THOMAS BARLOW,
President of the Royal Medical Benevolent Fund.
CHARLES BALLANCE,
Chairman, War Emergency Fund Committee.

June 6th, 1928.

PROPHYLAXIS OF RICKETS.

To the Editor of THE LANCET.

SIR,—Dr. Helen Mackay's useful advice on the prophylactic treatment of rickets (THE LANCET, May 5th, p. 923) concerns only the treatment of the child, and I would like to draw attention to another way of preventing this common disease—namely, by the administration of cod-liver oil or some other anti-rachitic preparation to the pregnant woman and to the mother during lactation. The question whether this is rational has already been considered by A. F. Hess and Mildred Weinstock.[1] They administered cod-liver oil to expectant mothers in the last months before delivery and also fed pregnant rats on it and came to the following conclusion:—

"Judging from our experiments, it would seem that rickets cannot be prevented by improving the diet of the mother, (*a*) previous to pregnancy, (*b*) during pregnancy, and (*c*) throughout lactation, although it can be mitigated to a certain degree. Supplementing the diet of the mother for two generations also failed to render the young refractory. Infants were not protected by giving the mother cod-liver oil during the last two months of pregnancy. On the other hand, the fact that premature infants are markedly susceptible to rickets shows that prenatal nutrition does play a rôle. A consideration of the experimental evidence, of clinical tests, of the susceptibility of bottle-fed compared to breast-fed babies, and the striking seasonal incidence leads to the conclusion that rickets is mainly of postnatal origin. Although its incidence and severity may be influenced by improving the nutrition of the mother, our main efforts should be directed toward improving the environment and nutrition of the infant. Until these postnatal factors are corrected, we cannot hope to prevent rickets."

Little effect though Hess and Weinstock expect from the administration of cod-liver oil to women during pregnancy and lactation, yet they do not deny that, in this way, some result may be attained, and it is quite possible that the benefit would have been greater if the doses given had been larger, for here the coefficient of division (Verteilungs-coefficient) has to be taken into account, which is unfavourable for the small bodies of the fœtus and the suckling. Even less effect may perhaps be expected from the administration of cod-liver oil during lactation, it being generally accepted that mother's milk is poor in vitamin D. But may not the explanation of this be that the mother has not much of this vitamin to give? The unhygienic circumstances of life of most mothers render this supposition acceptable.

I will explain what led me to think of preventing rickets by improving the diet of the mother. For reasons of economy I had started giving the rats in our breeding-house cod-liver oil, of which we had a large supply in store, instead of butter which is more expensive. The females got 1·5 or 2 g. a week, which was a substantial dose. From the moment I took this measure all my efforts to produce rickets in their young remained fruitless, though I had never failed before. To find out the cause of this unexpected and extremely awkward result I carefully examined the material of the rickets-producing diets to find out the composition and the ratio of calcium

[1] Amer. Jour. Dis. Childr., 1924, xxvii, 1; Jour. Amer. Med. Assoc., 1924, lxxxiii., 1558.

to phosphorus, but found no deviation from the diet prescribed. None of the well-known diets (McCollum's with both hard and soft wheat, Steenbock's and Sherman's) had any effect, so nothing was left but to consider the cod-liver oil as the cause of the failure. Cod-liver oil was banned from this moment, but this measure had not immediately the desired effect, *for rats born even five months afterwards still proved refractory to rickets.* Consequently I was obliged to get rats from other breeding-pens in whose young I at once succeeded in producing rickets.[2]

I cannot put this method of preventing rickets by the administration of cod-liver oil to the test and must confine myself to suggesting it to others who can. It is true that we have effective remedies for rickets, but any one who has treated children for this disease will have found that it is sometimes long before they are cured. So here, too, prevention is better than cure. If prenatal administration of cod-liver oil should prove effective, there would be one way more, and that an easy one, to prevent the very common and by no means small evil of rickets.

I am, Sir, yours faithfully,

E. C. VAN LEERSUM.

Netherlands Institute of Nutrition, Amsterdam, May 24th, 1928.

AN INQUIRY INTO THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—May I ask those of your readers who are engaged in general practice and who would be willing to answer a series of questions relating to cancer cases to send their names to this laboratory. All that is necessary at the moment is to put a visiting-card into an envelope or write name and address on a post-card and forward it to me at the Department of Applied Statistics, University College, London, W.C.1.

The object of the inquiry will be to try to throw some light on the vexed question of cancer ætiology, and this will necessitate information relating to a large number of cases from all parts of the country which cannot be obtained in any other way. The identity of the cases need not be revealed, and the forms will be so devised that scarcely any writing is required. Such appeals have sometimes met with a disappointing response in the past, and it is therefore not proposed to proceed with the investigation unless a sufficient number of helpers is first assured.

May I suggest that before deciding that the rendering of such a service is impossible or that it will only be a waste of time, the last paragraph of the article on p. 1243 of this issue of THE LANCET may be read.

I am, Sir, yours faithfully,

PERCY STOCKS,
Reader in Medical Statistics.

Galton Laboratory, University College, London, W.C., May 28th, 1928.

"ENCEPHALOMYELITIS FOLLOWING VACCINATION."

To the Editor of THE LANCET.

SIR,—We have no desire to intervene in the discussion in your columns concerning the appropriate terminology to be applied to the pathological lesions in post-vaccinal encephalitis. But Dr. Perdrau in his reply to Prof. Turnbull and Prof. McIntosh has raised a further question which seems to us of much greater importance. He appears to take the view that acute disseminated encephalomyelitis is a pathological entity which may be associated with acute infections, such as vaccinia, or may occur without any obvious antecedent, and that pathologically the lesions in acute disseminated encephalomyelitis and post-vaccinal encephalitis are indistinguishable. We think it of interest, therefore, to record that we have, during the last two months, observed six cases of acute meningo-encephalomyelitis which differed clinically in many respects from acute epidemic encephalitis lethargica and showed a marked clinical similarity to post-vaccinal encephalitis, though none had recently been vaccinated. The ages of our patients ranged from 3 to 18 years. The onset of the illness was acute, with considerable pyrexia, drowsiness, and delirium. Cervical rigidity and Kernig's sign were present in four cases, and trismus in one. Ocular abnormalities were slight or absent. Aphasia was noted in two cases, quadriplegia in one, hemiparesis in one, and in one the principal signs were those of a myelitis. The cerebro-spinal fluid showed no gross abnormality. One patient died, one is left six weeks after the onset with total aphasia, apraxia, and weakness, and spasticity of both upper limbs, and the others have made, or are in process of making, a complete recovery. The occurrence of six cases in less than two months suggests the presence of a small epidemic. We hope to report these cases fully in a short time, when we are able to include Prof. Turnbull's report of his pathological examination on the fatal case, and Dr. S. P. Bedson's report on the results of his attempted transmission of the disease to animals. We propose in our further communication to deal with the relationship of this condition to other forms of encephalitis.

We are, Sir, yours faithfully,

DONALD HUNTER.
W. RUSSELL BRAIN.

London Hospital, E., June 8th, 1928.

MARVELLOUS MONTPELLIER MIDWIFERY.

To the Editor of THE LANCET.

SIR,—A few weeks ago I received, from a photographer's shop in Montpellier, a picture post-card containing a photograph of Prof. Delmas, of Montpellier, "ganté" but not "coiffé" (as were the midwives behind him), together with a printed notice of the professor as the author of the procedure of "extemporaneous evacuation of the uterus (delivery at a fixed hour)," and an account of this "accouchement indolore et sur rendezvous" (painless delivery by appointment).

This method consists in digital and manual dilatation of the cervix under spinal anæsthesia, the dilatation being produced, on an average, in three minutes; the child is then delivered by version or forceps, and three minutes later the placenta follows spontaneously, the whole labour being over in a quarter of an hour, "the infant in its cradle, the placenta in its dish, and the mother back in bed."

As a picture post-card is not the usual medium for the communication of medical information, I waited for the official account of Prof. Delmas's paper, which appears in the *Bull. de la Soc. d'Obs. et de Gyn. de Paris* for April, 1928. The spinal anæsthesia is produced by the injection of 10 cg. of sterile seurocain dissolved in 5 c.cm. of cerebro-spinal fluid. Amongst the 40 cases with which the paper deals, the author states "je n'ai eu que des cas heureux": one woman, however, died from acute anæmia and syncope (central placenta prævia). The child "if it had not succumbed before the extraction"—the author omits to state how many of these occurred—"was always preserved alive." The dilatation took 12 minutes in one case, 20 seconds in several cases, three minutes being the average. Prof. Delmas insists on the importance of limiting the procedure to cases where the cervix is healthy and not affected with cicatrices or new growth, and of its being carried out by specialists; and he admits that the procedure is too recent to be vulgarised—no indication of this appears in the picture post-card.

In the discussion which followed the paper there was agreement as to the rapidity with which dilatation could be carried out under spinal anæsthesia, opinions differing as to whether the latter facilitated version.

[2] A more extensive report on this work was published in the Nederlandsch Tijdschrift voor Geneeskunde, 1928, lxxii., 680.

M. Forgue alluded to the risk accompanying spinal anæsthesia. M. de Rouville admitted that the operation could be done *cito et jucunde*; but, as to *tuto*, "n'allons pas si vite et attendons." M. de Carrera had failed to turn a child after dilatating the cervix, and said he would never think of performing the operation in a normal labour, on account of the risk to the mother from the anæsthesia and intrauterine manipulations, and to the child from extraction by the feet.

Prof. Delmas's paper would have been more valuable if he had published all his cases and had stated how many children died. He gives particulars of 11 cases, of which only two were primiparæ; in one of these the cervix could not be dilated and vaginal Cæsarean section was done; in the other the dilation took 7 minutes, version and extraction 11 minutes. No injury was done to the soft parts, which is remarkable in a primipara of 19 whose child weighed 8¼ lb.

What of the children? In 10 out of 11 the child was born "astonished" (étonné) and had to be revived; one survived for 48 hours only; the remaining child cried at once. Opinions will differ as to the cause of the child's "astonishment"; M. de Rouville suggested that it was due to the brusque and involuntary capers it had cut in coming into the world. Personally, I was astonished, more than 40 years ago, at the frequency of visceral hæmorrhages in the child delivered by version and extraction,[1] and I cannot suppose that it was the perfection and harmlessness of Prof. Delmas's technique which caused the ten children to be "astonished," or the complete dilatation of the soft parts which caused the one child to cry out at once. Let us remember what that old Montpellier doctor François Rabelais tells us about the birth of Gargantua "in a strange manner," when an ugly old trot who had the reputation of an expert she-physician made Gargamelle so horrible a restrictive and binding medicine that the child, finding the passages obstructed below, sprang up and leaped, entered the hollow vein and issued forth at her left ear. As soon as he was born he cried, not as other babes used to do—miez, miez, miez, miez, but with a high, sturdy, and big voice, "Some drink, some drink, some drink," as inviting all the world to drink with him. "I doubt not," says Rabelais, "that you do not thoroughly believe the truth of this strange nativity. Though you believe it not, I care not much; but an honest man, and of good judgment, believeth still what is told him, and that which he finds written."

I am, Sir, yours faithfully,

London, June 2nd, 1928. HERBERT R. SPENCER.

THE PROBLEM OF ANKYLOSTOMIASIS.

To the Editor of THE LANCET.

SIR,—In your editorial note to Colonel Clayton Lane's letter in THE LANCET of May 19th (p.1043) you commented on the advantage of possessing a summary of the problem of ankylostomiasis. Allow me, therefore, to draw your attention to a fairly recent publication edited by the Rockefeller Foundation in 1922 (Publication No. 11 of the Rockefeller Foundation International Health Board, New York City, 1922, pp. 416) and an article from the Encyclopædia, entitled Occupation and Health (No. 25) in course of publication by the International Labour Office, which in a 12-page summary gives a fairly complete account of the different aspects of this problem. You will see that on p. 11, col. 2, disinfection of mines by salt is briefly discussed.

I am, Sir, yours faithfully,

League of Nations: International Labour Office, Geneva, June 6th, 1928. L. CAROZZI.

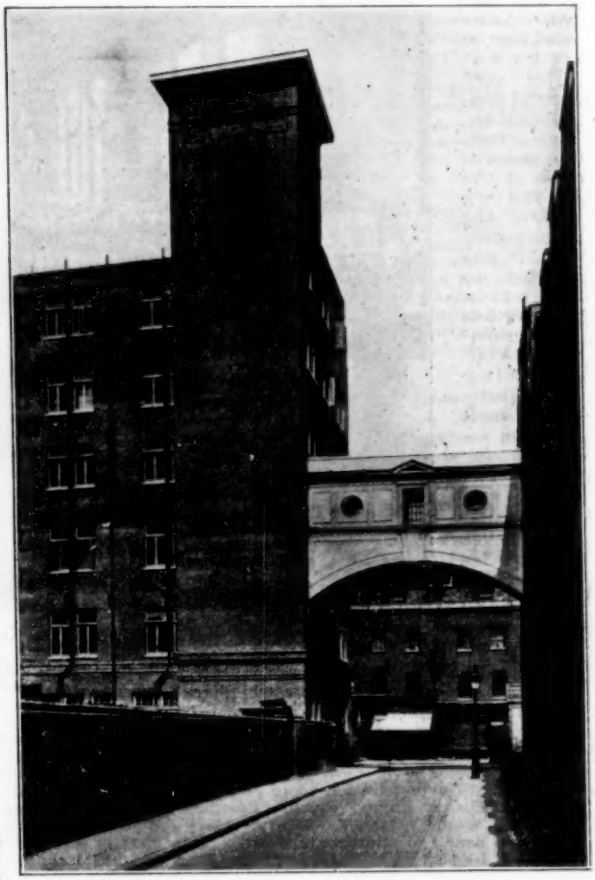
[1] Obs. Trans., 1893, xxxiii., 203.

BIRMINGHAM CRIPPLES' HOSPITAL.—The Woodlands Hospital at Northfields is about to be enlarged at a cost of £25,000. It is intended to concentrate at Woodlands all the in-patient works of the Birmingham Cripples' Hospital.

NEW BIOCHEMICAL INSTITUTE IN LONDON.

ADDITIONS TO THE MIDDLESEX HOSPITAL.

THE new building opened at the Middlesex Hospital yesterday (June 14th) really consists of two portions. The first—the basement, sub-basement, and ground-floor—is given over to hospital uses; the sub-basement contains the central boiler house and engineering plant for the hospital and all associated buildings, the basement includes the connecting corridors and subways to the hospital, annexe and nurses' home, whilst the ground floor provides a much-needed restaurant for the students. The second portion, from the first floor upwards, is the Courtauld Institute of Biochemistry. The space available for this Institute was clearly defined by the boiler-house site. It was ascertained that it would be possible to erect a building of five storeys above the restaurant and the problem facing those responsible for the laying out of this space was a very difficult one.



The Courtauld Institute of Biochemistry, Middlesex Hospital.

A detailed tour of the principal biochemical departments of the United Kingdom, together with a careful study of the plans of some of the better-known American institutions, showed that almost all existing buildings devoted to this type of work were split up into a large number of small rooms. There are many apparent advantages in this type of construction; it is possible to give every individual worker a room to himself and to segregate the various research problems to separate laboratories. But

experience has shown that certain disadvantages must be set against these obvious advantages. From the building point of view the number of partitions increases the complications with regard to pipe runs, &c., besides augmenting the cost very considerably. Moreover, the ventilation of a number of small rooms is usually very poor, and there can be no doubt that good ventilation is as important to the workers as is good apparatus and equipment. From the academic point of view, yet further disadvantages are apparent. A small number of separate rooms devoted to individual biochemical problems tends to divide up the whole subject into a series of water-tight compartments. By this system a man working on one problem may be deprived of the healthy scepticism and criticism of colleagues who are working on others. After very careful consideration, both from the point of view of the building and of the administration, it was decided to adopt a more or less new principle in constructing the Institute. Small rooms, except for very special purposes such as incubation and dark rooms, have been avoided, and a series of large, fully equipped laboratories have been built instead. In these big rooms a series of workers are investigating different problems, and it is hoped that with the abolition of physical partitions the mental barriers will also disappear.

Part of one of the New Laboratories.

The first floor is planned as one large laboratory for students, with a preparation room and store. The second floor contains a clinical routine laboratory with three examining rooms attached. The secretary's office is on this floor, near the staircase and lift. This floor is also connected to the Bland-Sutton Institute on the hospital site by means of a reinforced concrete bridge across the street. The third floor contains a large chemical laboratory with combustion and balance rooms, and at the end a large-scale preparation room. The fourth floor is planned to provide a library, optical dark room, standardisation laboratory, and the professor's private room and laboratory. The fifth floor allows for some extension as to half the area, the remaining portion being divided into two large animal houses, with a small incinerator room attached. Two electric push-button lifts are provided—one in the main staircase for passengers, and one for goods and food in the escape stairs. Both serve all floors.

To overcome the difficulty of providing a space in the floor for all the drainage from the benches, the constructional floor slab was placed at the bottom of the main steel beams, the space above and between the beams being used for all pipe ducts. A further advantage gained by this means of construction was flatness of ceilings everywhere. The heating is by low-pressure hot water, the pipes running round the various rooms about 2 ft. below ceiling level. Some rooms, such as the animal houses, are heated by steam. The overhead pipe system was adopted, after considerable discussion, as it was practically impossible to find suitable positions for radiators, owing to the benches and other obstacles. The laboratories are fitted up very carefully, every bench and its detailed fittings having had minute consideration. All services, such as hot water, cold water (both tank supply and high pressure), gas, steam, electric light and power, are provided wherever required.

The all-important problem of drainage from the various benches and isolated sinks was considered in great detail, and many other large laboratories were visited to see the different types in use. The methods finally adopted were governed by two important considerations: (1) The possible deterioration, through chemical action, of the material employed, and disturbance of jointing by vibration and use: (2) the necessity to prevent as far as possible any trouble from fouled waste ducts in the rooms or the building itself.

It was decided to use chemically pure lead in the form of pipes. These were laid in one piece from end to end, with all joints carefully welded. The pipes were laid to a gentle fall in shallow concrete channels, lined with asphalte, as an additional safeguard against possible leakage. These asphalte channels have an iron sleeve protruding through the external wall, to act, first, as a warning pipe, should a leakage occur, and, secondly, to form a way through which the main waste pipe goes to connect up with the main iron stack pipes. Careful arrangements are made to keep these main stacks fully ventilated and easy of access at each connexion. The horizontal lengths of pipe under the floors are reduced to a minimum. Wherever possible they are arranged under the benches themselves and well above floor level, thus making them easy of access.

The prevention of fouling is ensured by introducing laboratory traps to every isolated sink or group of sinks on each bench, thus forming an effectual barrier, and at the same time intercepting all discharges and helping to break down strong mixtures before they find their way to the lead pipe work. All soil drainage is taken separately to main external stacks.

The arrangements in the two animal houses were given special consideration. The floor is asphalte, walls distempered, and all cage racks are suspended from the ceilings. This makes the cleaning of the floors a simple matter and also helps to prevent vermin from getting to the animals. All the laboratories have white glazed brick walls, casement windows with opening fanlights, and deal floors on wood joists. Some of the smaller rooms have either a granolithic or an asphalte-finished floor. All the woodwork is stained and dull varnished. Generally, everything has been kept as simple as possible.

The new Institute will be in the charge of Dr. E. C. Dodds, Professor of Biochemistry in the University of London.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

PETITION AGAINST VIVISECTION.

ON June 6th Lieut.-Commander KENWORTHY presented a petition in the House of Commons, signed on behalf of 26,031 persons, praying the House of Commons to "prohibit by law the cruel practice of experiments on living animals."

RATING AND VALUATION BILL.

In the House of Commons on June 7th this Bill was read a second time and committed to a Committee of the whole House.

SCOTTISH BOARD OF HEALTH.

On Monday, June 11th, the House of Commons went into Committee of Supply on a vote of £2,037,515 for the salaries and expenses of the Scottish Board of Health. Mr. JAMES HOPE, Chairman of Committees, was in the chair.

Slum Clearances.

Mr. ERNEST BROWN raised the question of slum clearances, which he said was one of the first political problems of the day. If they were going to understand the size of the problem they must decide how many people they intended to live in a room and how many families in a dwelling. The preliminary figures recently given to the Edinburgh City Council showed that there were 5000 houses in Edinburgh alone which should be marked down as unfit for human habitation. He welcomed the fact that this year 21,660 houses had been built as compared with 14,930 in 1926, and also the prophecy that next year it was hoped to exceed the 20,000 mark. With regard to slum clearance, however, they had not begun to touch the real problem in Scotland.

Mr. STEWART said that in Glasgow to-day there were 6000 people suffering from tuberculosis. Of those suffering from this disease who were living in one-apartment houses, only 57 had a room to themselves; 145 had a bed to themselves, though living in the same apartment with others; and 976 were sleeping in a bed with other people. In two-apartment houses the story was the same. There were 441 with a room to themselves and 2506 sleeping in beds with others. Out of a total of 3415, fewer than 1000 had either a bed or a room to themselves. Could one wonder that tuberculosis still persisted? To-day in Glasgow they were facing the erection of another sanatorium for 400 patients which before it was finished would have cost something approaching £500,000. To provide a separate bed for over 5000 consumptive patients would require an annual addition of 1360 houses. Surely the Government could do something to give the local health authority the power to provide sleeping accommodation for these people and to provide a separate room for a person suffering from this disease.

An Efficient Medical Service.

Mr. MACPHERSON said that one of the very best instruments that had ever been introduced into the medical service of any country was the Highlands and Islands Medical Service in Scotland; but the amount annually allocated for that service was only £42,000. The very special work which this service performed could not be done for £42,000 a year. He believed that about £60,000 a year was actually spent on the service. What did the Government intend to do to keep this fund solvent? The Northern Infirmary at Inverness badly needed help in order that recent appliances of science of medicine and of surgery could be procured and that the infirmary should be properly equipped and maintained. A permanent grant from the Board of Health, from the Government, or from the Highlands and Islands Medical Service Fund was urgently needed for this purpose.

Tuberculosis.—Venereal Diseases.

Dr. DRUMMOND SHIELS praised the report of the Scottish Board of Health and paid a tribute to the valuable work that had been done in connexion with it by Sir Leslie Mackenzie, who had just retired. It was a matter for regret that the progressive fall in the death-rate from tuberculosis was not maintained during the last year, but probably the reason given—the very severe climatic conditions in Scotland last year—might be part of the explanation. In Scotland many cases in an infectious stage of the disease were living in crowded homes, so that public money spent in other efforts to get rid of this disease was being wasted. He urged that continued attention with the object of securing a pure milk-supply was of great importance in combating the non-pulmonary forms of tuberculosis. He was glad that the report called attention to the very serious position in regard to tuberculosis in the Highlands and Islands of Scotland as compared with the rest of Scotland. In his view, the major causes of this contrast were (1) the very bad housing conditions in the Highlands and Islands, (2) the unsatisfactory feeding of some of the people who lived there, as they were not in a position to resist disease. He would like to have said something about the Hairmyres Colony and of that method of dealing with certain types of tuberculosis. There was no doubt that such a labour colony was on right lines. The Middle Ward District of Lanarkshire and the Board of Health were to be congratulated on coöperating in this effort to deal with tuberculosis on up-to-date lines.

The references to venereal disease in the report dealt with the general propaganda methods which were undertaken with the encouragement of the Board of Health and also with the possibility of preventive methods. They said in regard to those that certain preventive methods might be contributory to the spread of the disease. He (Dr. Shiels) thought he had heard an echo of that in other quarters. It was not the opinion of the Army and the Navy, which had reduced their figures in connexion with these diseases by the methods which were so sceptically referred to in the report. The Trevethin Committee also favoured them. He was interested to find that the Board came to the conclusion that secrecy, which was so much stressed in the debate in that House a few weeks ago, did not seem to be of great importance, at least as regards the great cities. One could see quite well that while the language used was guarded the Board of Health, as they had shown on several occasions before, were not satisfied that the present arrangements and system were satisfactory or capable of dealing adequately with these serious diseases. This certainly justified the attitude of the Edinburgh Corporation and other Scottish local authorities on the matter. It was an appalling fact that last year in Scotland the number of defaulters was 51 per cent. A very large amount of public money was spent in dealing with this subject and it was obvious that a great deal of that money was wasted, and in the name of economy, if humanity was not enough, something else should be tried.

Attacks on the Medical Profession.

Dr. Shiels commented on the return in the report to the attack made last year on the medical profession in regard to certification of people as unfit for employment. He hoped that they had heard the last of that, because in his opinion that attack, while it might have been justified in some cases, had been altogether overdone. Altogether an attitude was being taken up in regard to the medical profession, and incidentally in regard to their patients, which was quite unjustifiable. The report did not sufficiently recognise that owing to unemployment the condition of the people in Scotland during the past few years had been such that they were more liable than formerly to illness. It was unfortunate that by means of threats and suggestions of surcharges and referees and so on medical men should have it suggested to them that they should cut down prescribing to the very minimum amount. He had never seen or heard of any investigation to find out if medical men were supplying sufficiently good medicines and the tonics and building-up preparations which were often necessary. So long as the medicine was cut down and the cost of prescribing was low there was evidently no worry as to whether the insured person was getting proper remedies. The whole tendency of the system was to cause the doctor to be afraid to give what in many cases would only be adequate for the nature of the case.

Sir R. HAMILTON called attention to the enormous value of the work of the Highlands and Islands Medical Service Fund. Since the Fund was instituted in 1913 money values had altered enormously. The Fund was expected to do the same work to-day, when costs were infinitely higher, as it was doing in 1913. In a short time, unless a further contribution was made, the work of the Fund could not be carried on, and it would have to come to an end in 18 months. He had it on the best authority that another £25,000 a year was required. A branch of the work which had been an outstanding success had been the appointment of consulting surgeons in the outer islands.

Mr. SCRYMGEOUR, dealing with venereal disease, said that there was evidence that the Scottish Board of Health would like to do something more, but were being held back by the English Ministry of Health. The Liverpool Bill reached the second reading stage without challenge, but when the Edinburgh Bill came up, it was defeated. The instigation of the Government, on representations from the Secretary for Scotland, was against the Bill.

Sir ARCHIBALD SINCLAIR emphasised what Dr. Shiels had said about harrying doctors for over-prescribing. He asked for an assurance from the Government that the efforts of the local people to maintain and improve the equipment of the Bignold Hospital, in Wick, and the Dunbar Hospital, in Thurso, would be supported, and in particular

that they would be able to obtain the much needed services of a surgeon.

Mr. STEPHEN complained about a paragraph in the report of the Scottish Board of Health dealing with the certification by doctors under the National Health Insurance scheme. He challenged the implied reflection in it that doctors in Scotland were not acting as professional men with the responsibilities which they undertook when they became doctors, and that they were allowing people to draw sick benefit when they were not entitled to it. The experience of those who had to take advantage of National Health Insurance was that, so far from its being easy to get a certificate of ill-health, the tendency was to send people back to work when they were unfit to go. It was obvious that the paragraph in the report was written to try to terrorise the timid members of the profession into sending people back to work before they were fit to return, or to keep them from giving certificates to members of the working classes who, through being unemployed and consequently unable to get proper food, had got into an unhealthy condition.

Reply to the Debate.

Major ELLIOT, Under Secretary of State for Scotland, replying to the debate, said that Mr. Stephen had spoken of reflections and attacks on the medical profession contained in the report. The spectacle of Mr. Stephen defending the medical profession against the attacks of Sir Leslie Mackenzie was one that they might well leave to the delighted daughter of the medical profession in Scotland. There were many houses in Scotland which not only did they regard as unfit for human habitation, but their fathers and grandfathers had also done so, and he sometimes thought the very savages in the fields would also have classified as unfit. Those were the houses that the Board of Health wished to get rid of in the first place, and until they made a beginning with them it was useless to re-classify houses, and say that no houses were satisfactory unless there were three rooms, with bathroom, water closet, and other modern conveniences. They had done their utmost to impress on the local authorities who were building houses that people at present were suffering acutely not only from unsatisfactory houses but from overcrowding. A cut had taken place in the English housing subsidy, but none took place in that for Scotland, and they had the assurance that none would be made until March 31st. In regard to the subsidy for the Highlands and Islands Medical Service, that, again, would have to be considered. It was now £42,000 a year, but the Fund was drawing on its unexpended balances to make up an expenditure of £62,000 a year. The Secretary of State would again approach the Treasury, and he had no doubt that they would succeed in getting a substantial increase in the statutory rate of that subsidy. The report of the Scottish Board of Health was a review of the work of the local authorities. It pointed out many directions in which that work needed to be expanded and in which it could be greatly advantaged by a better system of coöperation among the local authorities. All these things were being brought up, considered, and dealt with in the great financial measures now before Parliament.

The debate was adjourned.

HOUSE OF LORDS.

THURSDAY, JUNE 7TH.

National Health Insurance Bill.

Viscount GAGE, in moving the second reading of the National Health Insurance Bill, said that it was an agreed measure between the two parties chiefly concerned. The criticism which had been, so far, directed against the Bill was not directed against what it did, but what it did not do. The Minister of Health had proceeded on the lines of doing as much as he could to simplify administration, to extend the advantages of medical and other benefits, and also to prevent abuses without giving offence to susceptibilities. Also, he had naturally taken into consideration the very important question of expense, for in the present depressed state of industry he had not considered it advisable to add to the already considerable burdens occasioned by the social services. The noble lord went on to explain the provisions of the Bill. In conclusion, he claimed that the measure would remove many grievances and would simplify administration to a very large extent. The extent to which it encroached on public funds was very small.

Lord GORELL said that he thought that Lord GAGE was putting the case a little high when he said that this Bill was an agreed measure. Technically, perhaps, it was so, but not if that phrase was taken as meaning that those with whom he (Lord Gorell) was associated could in any sense be said to be content with its provisions. No full explanation had been given, either in their Lordships' House or in the House of Commons, as to why the powers of the Minister of Health, with a large Parliamentary majority behind him, were so limited, and why it should not have been possible to take a much bigger view of the whole question of National Insurance. He regretted greatly that there had been no advance at all in regard to specialists' services. He regretted particularly that the great question of maternal mortality had been left wholly untouched. He would have liked to see something more done emphasising the necessity for attendance in maternity cases. The Bill could not be regarded as final; it was a small instalment, an improvement in machinery, and as such he accepted it and was glad to have it placed on the Statute Book.

Earl BEAUCHAMP said he was glad to see that His Majesty's Government now welcomed the institution of national insurance and were anxious to make it an integral part of the national life. He agreed, however, with Lord Gorell that this measure did not go far enough. It only carried out 32 out of the 122 recommendations of the Royal Commission. Adequate justice was not being done to the insured people of this country, and would not be done until the money which had been taken from them had been restored.

Lord COZENS-HARDY said that the Bill, so far as it went, certainly improved the great system of National Health insurance, and for that reason he welcomed it, but he regretted that the Government had not had the courage of their convictions in regard to some of those extensions of medical benefit which on all hands were regarded as urgently necessary. There was one point in regard to Clause 16. Under the present arrangements for medical benefit the insurance committee had to set up statutory subcommittees to investigate complaints concerning the services included in medical benefit, whether relating to doctors or chemists. These medical and pharmaceutical subcommittees did very useful and important work. Complaints of this nature could only be investigated satisfactorily locally, and he trusted that they would have some assurance that provision for similar machinery for investigating complaints in regard to any such local services would be made whether those services were statutory or additional benefits. In particular, he hoped that they would be assured that insurance committees would be required to set up a dental service subcommittee on the same lines as the medical service subcommittee.

The Bill was read a second time.

MONDAY, JUNE 11TH.

Food and Drugs (Adulteration) Bill.

Viscount GAGE, in moving the second reading of the Food and Drugs (Adulteration) Bill, said that it was a measure which consolidated legislation relating to the sale of food and drugs extending over a period of about 50 years.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 6TH.

Storage of Poisonous Gases.

Lieut.-Commander KENWORTHY asked the Home Secretary what regulations were in force for preventing the storage of poisonous gases near large centres of population, and what steps were taken to prevent their accidental release; if his attention had been drawn to the disaster at Hamburg where a supply of phosgene gas was accidentally released, with many casualties; whether he was satisfied that the regulations in this country were sufficient to avoid any such danger and that those regulations were strictly adhered to; and whether the police had a supply of gas masks available for use in the event of an emergency.—Lieut.-Colonel Sir V. HENDERSON, Under-Secretary for the Home Office, replied: There are no such regulations in force in this country, and the considerable use which is made of phosgene and other poisonous gases in various industrial processes necessitates the storage of these gases in the factories concerned. The precise cause of the Hamburg disaster is not clear, but it is noteworthy that the container at Hamburg appears to have been of much greater capacity, and therefore liable to far greater stress than the containers generally in use in this country. The chief safeguard against accidental release is that the containers should be of adequate strength, and the inquiries my hon. friend has made on this point indicate that the containers in use here have a wide margin of safety and that the position generally is satisfactory. An inquiry, however, into the storage of such gases is at present being carried out by a committee of the Scientific and Industrial Research Department, and it will be necessary to review the situation in the light of their findings. The supply of gas masks to the police will be considered, but on present information this would hardly appear to be necessary.

Mr. THURTLE asked the Secretary of State for War whether any phosgene gas, or gas of a similar nature, was in the possession of the British Army either at home or abroad.—Sir L. WORTHINGTON-EVANS replied: Certain small quantities of phosgene and similar compounds are kept by the Army for use in research and experimental work.

Slum Clearances in Wales.

Sir ROBERT THOMAS asked the Minister of Health whether any local authority or authorities in Wales and Monmouthshire, other than Welshpool Town Council, had put forward schemes for slum clearance, and on what grounds in each case the schemes were rejected by his department.—Sir KINGSLEY WOOD replied: No schemes have actually been submitted by any other local authority; I am aware that the urban district council of Pontypool and the town council of Merthyr Tydfil have had such schemes under consideration; the former council deferred their scheme in order to concentrate on the erection of new houses, and in the latter case the present financial position of the council has led to the deferment of the scheme.

THURSDAY, JUNE 7TH.

Motorists and Excessive Noise.

Sir ROBERT THOMAS asked the Home Secretary how many motorists were prosecuted for excessive noise during the last six months of 1927, and up to the present date this year.—Sir WILLIAM JOYNSON-HICKS replied: The number of prosecutions in the Metropolitan Police District for excessive noise during the last six months of 1927 was 6622, and from Jan. 1st to April 30th, 1928, inclusive, was 4150.

Coroners and Instructions to Juries.

Mr. MALONE asked the Home Secretary whether, in view of the instruction given by the coroner to the jury at the inquest on a recent case where death was found to have been due to poisoning—namely, that they must name some person as having administered the poison in order that there might be further inquiry, and in view of the fact that another coroner gave a completely contrary instruction to the jury in similar circumstances, so that an open verdict was returned, he would consider the introduction of a measure to define more clearly the instructions to coroners for advising juries in cases of this sort.—Sir WILLIAM JOYNSON-HICKS replied: It would be wrong for me to comment on the discharge by any judicial officer of his judicial functions, but I am bound to say that I do not think that the effect of the coroner's directions is correctly stated in the first part of the question. In any case I see no reason as at present advised for considering any amendment of the law on this point.

Nursery Schools.

Mr. TREVELYAN asked the President of the Board of Education whether steps had been taken to encourage the provision of nursery schools, and what was the Board's policy in this respect.—Lord EUSTACE PERCY replied: The Board's policy in this, as in other matters, is that laid down three years ago in Circular 1358—i.e., "to ask all local authorities to consider the more immediate needs of their areas in all grades of education, and to formulate programmes of action covering a definite period." Local authorities are now engaged in carrying out programmes formulated in accordance with this policy, and covering the three years 1927–30. This policy is based on the principle that each local authority is best able to judge the relative urgency of different proposals for educational development in its own area, and that pressure from the Board in favour of particular proposals is more likely to retard educational development than to advance it. Since last year the Board have approved proposals for three new nursery schools.

Water-supply in Schools.

Mr. WELLOCK asked the President of the Board of Education whether steps had been taken to secure the supply of hot water in public elementary schools, more especially in infant departments.—Lord EUSTACE PERCY replied: The Board fully recognise the desirability of providing a supply of hot water, especially in infants' schools, and it is their practice to suggest that it should be provided in all cases where it appears reasonably practicable to do so.

Mr. TREVELYAN asked the President of the Board of Education whether he had obtained the names of those schools referred to on p. 71 of Sir George Newman's report on the Health of the School Child for the year 1925, as being entirely without any water-supply, and what steps he had taken to require a water-supply to be provided in them.—Lord EUSTACE PERCY replied: I have obtained the names of the Nottinghamshire and Herefordshire schools referred to. A number of the schools are included in the Black List survey, and in some cases a water-supply has now been laid on. In the large majority of the cases a supply of water, though not actually laid on to the school, is available in the immediate vicinity, often in adjoining premises, and there are very few cases where water has to be carried from any distance. The right hon. gentleman will, moreover, realise that the water-supply at a village school very frequently depends upon the supply available for the village generally, and cannot be dealt with by the school authorities as a separate problem.

Medical Benefit to Aged Friendly Society Members.

Mr. SMEDLEY CROOKE asked the Minister of Health if his attention had been drawn to the effect of the discontinuance of the State grant in aid of medical benefit to aged friendly society members, and whether, in view of the comparatively small amount involved, he would give the matter further consideration.—Mr. CHAMBERLAIN replied: The total amount of the grant in question was less than £1000 in 1926 and was rapidly diminishing. The money had to be distributed amongst any of the 7000 approved societies and branches which had any members who were permanently disabled on July 15th, 1912, and the average amount payable to any society or branch was less than 10*s*. The distribution of these trifling sums involved considerable work on the part of the societies concerned and of my department, the cost for which far exceeded the total sum to be distributed. In these circumstances I have come to the conclusion that the continuance of the grant is not justified. This decision has been communicated to the Consultative Council, on which approved societies of all types are represented, and has received their concurrence.

Report of Committee on Vaccination.

Dr. VERNON DAVIES asked the Minister of Health if he had received the report of the committee appointed to inquire into vaccination, and if this report would be available for members of the House.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. This report will be published shortly as a command paper.

Discharge of Crude Sewage into a River.

Mr. WARDLAW-MILNE asked the Minister of Health whether his attention has been called to the fact that quantities of fish had been recently killed in the River Penk owing to the action of the corporation of Wolverhampton in discharging crude sewage into that river; whether a certificate was granted to the corporation by the Ministry of Health authorising that proceeding; and, if so, upon what grounds that was done.—Mr. CHAMBERLAIN replied: I am aware of this matter. A certificate was granted under a local Act of 1891 by an inspector appointed by me, but under the Act, on his own responsibility. There is an appeal to me; and an appeal has, in fact, been received and is under consideration. I may add that the certificate did not authorise the discharge of crude sewage.

Local Authorities and Food and Drugs Act.

Dr. VERNON DAVIES asked the Minister of Health if he was aware that the medical officer of health or sanitary inspector of many local authorities did not appreciate the fact that they were entitled to procure samples of food and drugs under the Sale of Food and Drugs Acts for analysis, and, if found to be adulterated, prosecute the offender, although these officers might not be the usual authority for the administration of these Acts in their area; and if he would draw the attention of all local authorities to their powers in this respect.—Mr. CHAMBERLAIN replied: I will bear my hon. friend's suggestion in mind.

Committees on Silicosis.

Mr. KELLY asked the Home Secretary the number of committees set up in Great Britain to deal with cases of silicosis and for deciding the payment of compensation to workers incapacitated by silicosis.—Sir WILLIAM JOYNSON-HICKS replied: I assume the hon. Member refers to the Joint Committee set up under the Refractories Industries (Silicosis) Scheme. There are seven such committees. In reply to further questions the Home Secretary said that an inquiry into the pottery industry was taking place, but that notice would be required before he could say anything about silicosis among brickmakers.

Vaccination Statistics.

Mr. SHEPHERD asked the Minister of Health if he would furnish a return showing the number of infants vaccinated per cent. of the births for the past five years in Newcastle-on-Tyne, Birmingham, Manchester, Liverpool, Sheffield, Bradford (Yorks), Leeds, Warrington, and Darlington.—Mr. CHAMBERLAIN replied: Figures for 1927 are not yet available, but the following statement gives the number of births registered, and the number and percentage of these successfully vaccinated, in each of the years 1922 to 1926. In some cases the figures include those for areas outside the county boroughs mentioned in the question which are

situated within the same vaccination officer's district, as separate figures for these areas are not given in the vaccination officer's return.

Area.—(A) Newcastle-upon-Tyne C.B.; (B) Birmingham C.B. (with Perry Barr U.D.); (C) Manchester C.B. (with Failsworth U.D.); (D) Liverpool C.B. (with part of Sefton R.D.); (E) Sheffield C.B. (the part within Sheffield Union); (F) Bradford C.B. (with Clayton, Denholme, and Drighlington U.D.'s); (G) Leeds C.B.; (H) Warrington C.B.; (I) Darlington C.B.

Area.	Year.	Births registered.	Successfully vaccinated.	% vac. to births.
(A)	1922	7,433	3,951	53
	1923	6,962	4,184	60
	1924	6,971	4,442	64
	1925	7,030	4,713	67
	1926	6,729	4,580	68
(B)	1922	20,184	11,768	58
	1923	19,355	12,671	65
	1924	18,614	12,264	66
	1925	18,283	11,401	62
	1926	18,352	11,237	61
(C)	1922	16,537	9,236	56
	1923	16,189	9,808	61
	1924	15,289	9,287	61
	1925	14,989	8,845	59
	1926	14,856	8,869	60
(D)	1922	21,531	15,428	72
	1923	20,663	15,563	75
	1924	20,600	15,274	74
	1925	19,617	14,153	72
	1926	19,902	14,258	72
(E)	1922	10,631	5,040	47
	1923	10,012	5,774	58
	1924	9,615	5,424	56
	1925	9,238	5,177	56
	1926	8,976	5,131	57
(F)	1922	5,431	1,420	26
	1923	5,512	1,730	31
	1924	5,137	1,588	31
	1925	5,045	1,438	29
	1926	4,888	1,580	32
(G)	1922*†	9,803	5,276	54
	1923*†	9,311	5,725	61
	1924*	8,914	5,596	63
	1925	8,490	4,949	58
	1926	8,446	5,060	60
(H)	1922	1,808	1,183	65
	1923	1,789	1,205	67
	1924	1,656	1,125	68
	1925	1,736	1,154	66
	1926	1,645	1,067	65
(I)	1922	1,518	263	17
	1923	1,461	377	26
	1924	1,423	314	22
	1925	1,318	277	21
	1926	1,319	299	23

* Including part of Morley M.B.
† Including parts of Rothwell U.D. and Hunslet R.D.
Vac. = Vaccination.

FRIDAY, JUNE 8TH.

Maternal Mortality in Kensington and Southwark.

Mr. DAY asked the Minister of Health whether he was in a position to give the number of deaths per 1000 of the population which had occurred under the head of maternal mortality during the last available periods in the boroughs of Kensington and Southwark respectively.—Mr. CHAMBERLAIN replied: The provisional numbers of deaths classified as due to childbirth for the Metropolitan Boroughs of Kensington and Southwark in 1927 amounted, respectively, to rates of 0·034 and 0·049 per 1000 of the population of those boroughs. The corresponding rates, according to the more usual calculation per 1000 live births, were 2·26 and 2·57 respectively.

MONDAY, JUNE 11TH.

Tuberculosis Patients and Vaccination.

Mr. THOMAS WILLIAMS asked the Minister of Health if he was aware of cases in which sufferers from tuberculosis had been precluded from receiving sanatorium treatment unless the patient consented to be vaccinated; and whether he had sanctioned regulations to that effect.—Sir KINGSLEY WOOD replied: The answer to both parts of the question is in the negative.

Mr. WILLIAMS asked if the right hon. gentleman was aware that in the West Riding of Yorkshire it was said that some regulation existed which precluded a person suffering from tuberculosis from entering a sanatorium unless he was vaccinated, and if he would make inquiries.

Sir KINGSLEY WOOD replied in the negative. He said he would want something far more definite than what some one said in some part of the country. If Mr. Williams had any definite information he would inquire into it.

Mr. WILLIAMS asked if he was to understand that the Ministry was not responsible for a regulation of that kind.

Sir KINGSLEY WOOD: I have just said so.

TUESDAY, JUNE 12TH.

Pharmacists in the R.A.M.C. Territorial Units.

Sir WILFRID SUGDEN asked the Secretary of State for War whether any steps had been taken to secure the services of pharmacists in Royal Army Medical Corps Territorial units.—Sir L. WORTHINGTON-EVANS replied: Provision for the enlistment of dispensers is made in the Establishments of Field Ambulances and General Hospitals of the Territorial Army.

Sir W. SUGDEN asked if these pharmacists were invited or desired to serve in the Royal Army Medical Corps.

Sir L. WORTHINGTON-EVANS replied that they certainly would be eligible if they desired to enlist.

Storage of Drugs and Medical Supplies in the Army.

Sir WILFRID SUGDEN asked the Secretary of State for War at what time in their military career quarter-masters of the Royal Army Medical Corps received instruction in the storage of drugs and medical supplies in such a manner as to prevent waste and deterioration; whether they were at any time subjected to an examination on this subject; and, if so, what steps were taken to ensure that the examiners themselves possessed an intimate knowledge of the storage of drugs and medicines.—Sir L. WORTHINGTON-EVANS replied: Drugs and medical supplies are only stored in military hospitals in quantities sufficient for approximately the current six months' requirements. Instruction in their storage is given as part of the course of dispensing which all soldiers of the Royal Army Medical Corps have to pass before attaining the rank of sergeant. The examination at the end of the course is conducted by a board of medical officers.

New Medical Evidence and Pension Appeals.

Lieut.-Colonel THOM asked the Minister of Pensions what was the procedure by which new medical or other evidence which was not before a pensions appeal tribunal on the hearing of a war pension claim, and which, had it been before the tribunal, would or might have resulted in a decision different from that arrived at, was brought to the notice of the tribunal; and whether the claimant in such circumstances was given an opportunity before the tribunal of leading and being heard on, and having his claim reconsidered in the light of, such new evidence.—Lieut.-Colonel STANLEY replied: The decision of an Appeal Tribunal is, by Statute, final, and the provisions of the War Pensions Act, 1919, do not admit of a re-hearing by the Tribunal of cases once decided. As, however, the House has on more than one occasion been informed, the Ministry have been enabled, in exceptional cases where fresh material evidence is produced, to reconsider the claim. If such evidence is produced in a case where an appeal has been made and has failed, it is their practice to consult the President of the Tribunal informally before making any recommendation for a grant, in order that no point in favour of the claimant may be overlooked.

Final Pension Awards.

Mr. ROBINSON asked the Minister of Pensions if he would issue life pensions at the current rate to all pensioners in receipt of an award for 12 months, and until further instructions, who had not made an application for treatment since the issue of the award.—Lieut.-Colonel STANLEY replied: I agree with the hon. Member as to the desirability of making final awards in all cases as early as possible, but it would not be justifiable, nor would it be in the interests of pensioners, that such awards should be made on the lines suggested by the hon. Member without proper medical consideration of the individual cases.

Specialist and Consultant Service on National Insurance.

Mr. HORE-BELISHA asked the Minister of Health whether he was now in a position to make a statement regarding the recommendations of the consultative council in respect of the proposals made by the Royal Commission on National Health Insurance that the scope of the benefit should be extended to include a consultant and specialist medical service, and that the necessary funds for this purpose should be obtained by a partial pooling of future surpluses of approved societies.—Sir KINGSLEY WOOD replied: The recommendations of the Royal Commission, to which the hon. Member refers, were very fully considered by the consultative council, who unanimously endorsed the recommendation that the first extension of the statutory benefits of National Health Insurance should take the form of the widening of the scope of medical benefit to include a specialist and consultant service. The Council, however, by a large majority, declined to endorse the recommendation of the Royal Commission that the cost of this extension should be met by means of a partial pooling of future surpluses of approved societies.

CASUALTIES AND OUT-PATIENTS AT THE LONDON HOSPITAL.—At the recent Court of Governors it was reported that the number of minor casualties treated during the past quarter was 5971, as compared with 11,289 in the corresponding quarter of last year. The fall is due to the policy of discouraging the attendance in the receiving-room of patients suffering from very minor ailments who are well able to pay for private treatment. It has been decided to alter the charge to out-patients in a position to pay to a uniform amount of 1s. for a week's treatment, including dressings, X rays and medicine. The poorest patients will, however, still be treated free. The amount received for the quinquennial appeal is now £79,000.

Obituary.

WILLIAM ALEXANDER YOUNG, M.B. ST. AND.

HARD upon the tragic death from yellow fever of Hideyo Noguchi, which occurred on May 21st at Accra, comes the sad information that the same disease has carried off William Young, the Director of the Medical Research Institute of the Gold Coast. The tragedies may well be connected, as it seems probable that Dr. Young incurred the fatal infection when making a post-mortem examination of Prof. Noguchi. William Young, although he received his education entirely in Scotland, was a Londoner, and was born in 1889 in Fulham. He was educated at Forfar Academy and University College, Dundee, the medical school affiliated to the University of St. Andrews, and graduated in medicine and surgery in 1911. Returning to England, he was appointed house physician at the Royal Infirmary, Halifax, and held a further house appointment at the Seamen's Hospital, Greenwich, after which he acquired the diploma in tropical medicine and hygiene at the University of Liverpool. In 1913 he received an appointment in the West African Medical Service, and the war found him at his post in Sierra Leone. He immediately took a commission in the R.A.M.C. and served throughout the war, mainly in the Cameroons campaign. On the cessation of hostilities he was appointed assistant bacteriologist at the Medical Research Institute in Nigeria, where he was soon recognised, both by the work that he did and his written accounts, as an accurate diagnostician and a really scientific bacteriologist. The pathology of many tropical diseases—blackwater fever, trypanomiasis, and yellow fever especially—was studied by him intensively, as the various circumstances of their epidemicity and endemicity came before him, and his contributions to the transactions of the Royal Society of Tropical Medicine and Hygiene were always thoroughly well informed. His keen sense of proportion may be seen in his work on the bacteriology of Sierra Leone waters which appeared in this journal, and in many other contributions to the same pages. He was appointed Director of the Medical Research Institute at Accra some three years ago, and all workers in the field which Young had made his own regarded him as an observer from whom the finest results might be obtained, and know well the loss inflicted upon their school of investigation by his death in the prime of life.

Outside his professional work Dr. Young was known for his interest in model engineering, while he was a particularly expert swimmer.

KENNETH ALEXANDER MACLEAN, M.B., CH.B. EDIN.

WE regret to record the premature death of Dr. Alexander Maclean, which occurred recently on the Gold Coast, where he was in private practice. He was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1910, when he came to practice in London, becoming assistant medical officer to the Paddington and Kensington Tuberculosis Dispensary. On the outbreak of war he took a commission in the R.A.M.C. and served with the 54th Division in Gallipoli. In 1916 he was appointed bacteriologist at Ismailia, and he remained working at this station until the middle of 1919, when he took up practice at Seccondee on the Gold Coast. Here, as might be expected of a man of tried professional ability, with a real insight into scientific medicine and a sound working knowledge of laboratory methods, he promptly made a position for himself. He conducted a private hospital and had a large practice amongst natives as well as Europeans, and while by his patients he was universally respected for his skill, his kindliness and generosity were always in evidence. His name further will be remembered on the West Coast of Africa as being the first observer to detect and prove microscopically that in a recent outbreak in the Ashanti gold fields the disease to be dealt with was plague.

Dr. Maclean had been for over eight years in Seccondee, and his untimely death from heart failure is a loss to medicine, to his friends, and to the Colony.

Medical News.

UNIVERSITY OF OXFORD.—At a Congregation on June 9th the degree of Doctor of Medicine was conferred (*in absentia*) on W. F. Skaife.

UNIVERSITY OF CAMBRIDGE.—Mr. J. B. Buxton, F.R.C.V.S., has been re-elected to the Chair of Animal Pathology.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

THIRD (M.B., B.S.).

Honours.—D. S. M. Barlow (*c*), Univ. Coll. Hosp.; H. I. Deitch (*d*), Middlesex Hosp.; Emma J. King (*c*), London (R.F.H.) School of Med. for Women; T. Morton (*a*), St. Thomas's Hosp.; H. J. Seddon (*b*, *d*, *e*, *University Medal*), St. Bart.'s Hosp.; F. R. Stansfield (*a*), Univ. of Leeds; and H. C. Trowell (*b*), St. Thomas's Hosp.

(*a*) Distinguished in Medicine; (*b*) in Pathology; (*c*) in Forensic Medicine; (*d*) in Surgery; (*e*) in Midwifery.

Pass.—F. W. Allinson, Univ. Coll. Hosp.; S. W. Allinson, Univ. Coll. Hosp.; I. Bakhsh, Guy's Hosp.; A. Bonnard, Univ. Coll. Hosp.; Irene F. Callender, St. Mary's Hosp.; M. Carpenter, Univ. Coll. Hosp.; Doris B. Clay, London (R.F.H.) School of Med. for Women; K. M. Cobban, Univ. of Liverpool; M. Coleman, Univ. Coll. Hosp.; N. E. Cook, St. Bart.'s Hosp.; J. N. Cumings, King's Coll. Hosp.; Constance M. Cusden, Charing Cross Hosp.; S. Davies, Univ. Coll. Hosp.; Jessie Edwards, Charing Cross Hosp.; Marguerite M. Fenn, London (R.F.H.) School of Med. for Women; G. M. FitzGibbon, St. Thomas's Hosp.; Dorothy D. Forster, St. Mary's Hosp.; F. Forty, Univ. Coll. Hosp.; Mary Fraser, London (R.F.H.) School of Med. for Women; P. J. Ganner, Univ. of Birmingham; Yetta Gimpelson, St. Mary's Hosp. and London (R.F.H.) School of Med. for Women; Barbara M. L. Glover, London (R.F.H.) School of Med. for Women; E. D. Y. Grasby, Guy's Hosp.; A. C. Hancock, Guy's Hosp.; J. C. Hawksley, Univ. Coll. Hosp.; R. A. Hill, St. Thomas's Hosp.; T. H. Hobbes, St. Bart.'s Hosp.; L. Holmes, St. Bart.'s Hosp.; Effie L. Hutton, London (R.F.H.) School of Med. for Women; Morfydd R. Jones, London (R.F.H.) School of Med. for Women; A. B. Kettle, Guy's Hosp.; M. C. Lavin, London Hosp.; Flora W. Lloyd, St. Mary's Hosp.; M. F. B. Lynch, London Hosp.; A. R. Macdonald, St. Bart.'s Hosp.; A. M. McMaster, St. Bart.'s Hosp.; E. H. Madge, Univ. Coll. Hosp.; M. L. Maley, St. Bart.'s Hosp.; Muriel M. Manley, London (R.F.H.) School of Med. for Women; A. N. T. Meneces, Univ. Coll. Hosp.; Mary M. Moller, London (R.F.H.) School of Med. for Women; R. H. Morley, Univ. of Leeds; E. G. Muir, Middlesex Hosp.; J. W. Notley, Univ. of Birmingham; Lois J. Ogle, London (R.F.H.) School of Med. for Women; Evelyn D. Owen, Charing Cross Hosp.; J. R. Pierre, Univ. Coll. Hosp.; E. S. Phillips, Guy's Hosp.; R. F. Phillips, St. Bart.'s Hosp.; A. M. Richards, Univ. Coll. Hosp.; Audrey E. Russell, Univ. Coll. Hosp.; J. E. Saville, St. Thomas's Hosp.; Thelma Shepherd, London (R.F.H.) School of Med. for Women; Gwladys V. Smallpiece, London (R.F.H.) School of Med. for Women; R. S. Smith, Univ. Coll. Hosp.; K. H. Southall, Univ. Coll. Hosp.; C. A. Stanley, St. Thomas's Hosp.; Mary M. Tulloch, Charing Cross Hosp.; and C. L. Worthington, Guy's Hosp.

Supplementary Pass List.—The following students have passed in one of the two groups of subjects:—

Group I.—Sophia Antonovitch, London (R.F.H.) School of Med. for Women; A. L. Basham, St. Thomas's Hosp.; A. C. H. Bell, St. Bart.'s Hosp.; Ruth Bocock, London (R.F.H.) School of Med. for Women; W. P. M. Davidson, St. Bart.'s Hosp.; Helena M. de Hartog, St. Mary's Hosp.; Marjorie M. Dobson, London (R.F.H.) School of Med. for Women; Dorothy V. Dunolly, Univ. of Durham; Dorothy E. Eglington, London (R.F.H.) School of Med. for Women; Geraldine W. Everett, London (R.F.H.) School of Med. for Women; G. S. Ferraby, King's Coll. Hosp.; C. Gross, Guy's Hosp.; Helen M. Herbert, London (R.F.H.) School of Med. for Women; Alice D. M. Hodge, London (R.F.H.) School of Med. for Women; E. C. H. Huddy, Guy's Hosp.; D. F. Kanaar, Guy's Hosp.; C. F. Moore, St. Bart.'s Hosp.; Mary E. Pease, Univ. Coll. Hosp.; G. C. Pether, Middlesex Hosp.; Gwynedd M. Phillips, King's Coll. Hosp.; Edith J. L. Smith, London (R.F.H.) School of Med. for Women; E. R. Smithard, Middlesex Hosp.; and E. S. Vergette, St. Bart.'s Hosp.

Group II.—Mabel A. Baker, London (R.F.H.) School of Med. for Women; S. Bernstein, Univ. Coll. Hosp.; S. J. M. De Navasquez, Guy's Hosp.; D. E. Dunnill, Guy's Hosp.; H. Evans, London Hosp.; R. V. Farr, Univ. of Birmingham; A. McK. Fleming, Middlesex Hosp.; W. H. George, London Hosp.; J. H. F. Jayasuriya, Ceylon Med. Coll. and Middlesex Hosp.; I. J. Jones, St. Thomas's Hosp.;

Gladys E. McCabe, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.; M. Mackenzie, Guy's Hosp.; H. Mannington, Middlesex Hosp.; C. G. MacM. Nicol, Charing Cross Hosp.; G. L. S. Plumbly, Univ. Coll. Hosp.; E. I. Puddy, St. Mary's Hosp.; J. R. Rickett, Guy's Hosp.; I. M. Robertson, St. Bart.'s Hosp.; Clarice A. Skidmore, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.; A. G. Watkins, Univ. Coll. Hosp.; P. C. Wickremesinghe, Ceylon Med. Coll. and Guy's Hosp.; and Elsie E. Wright, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.

UNIVERSITY OF BRISTOL.—At recent examinations the following candidates were approved:—

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—•‖T. H. Berrill, B. J. Boulton, †R. D. Jenkins, •Helen B. Murgoci, and ‡T. B. Wansbrough.

•With distinction in Special Pathology. †With distinction in Public Health. ‡With distinction in Obstetrics. ‖With Second Class Honours.

Group II.—D. E. C. Andrew and A. J. M. Grimston.

Part I. (including Forensic Medicine and Toxicology).—Rowena M. Hickman, April D. James, Mabel F. Potter, and •N. L. Price (with distinction in Materia Medica, Pharmacy, Pharmacology, and Therapeutics).

Forensic Medicine and Toxicology only.—Isabella J. Armstrong.

FINAL EXAMINATION FOR B.D.S.

Wynne M. Evans.

DIPLOMA IN DENTAL SURGERY.

J. H. Edwards, H. J. Phillips, and S. M. Weir.

GUY'S HOSPITAL MEDICAL SCHOOL.—At 4 P.M. on June 26th, Dr. Arthur Hopewell-Smith, of the University of Pennsylvania, will give a lecture at Guy's Hospital, entitled The Process of Osteolysis: an Historical Study.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—Sir William Beveridge, vice-chancellor of the University of London, will distribute prizes in the Governor's Hall of the hospital on Wednesday, June 20th, at 2.30 P.M.

LONDON HOSPITAL MEDICAL COLLEGE.—The prizes will be distributed at 3 P.M. on Friday, June 29th, by Sir Samuel Hoare, Secretary of State for Air.

THE Minister of Health has appointed Mrs. Barton, J.P., as an additional member of the Departmental Committee set up to consider the working of the Midwives Acts. (See THE LANCET, May 26th, p. 1104.)

INTERNATIONAL CONGRESS OF OTOLOGY AND LARYNGOLOGY.—At this congress, which opens on July 29th at Copenhagen, speakers will be limited to ten minutes owing to the number of papers which are being presented. The subscription for those attending the congress is 30 Danish kroners, and 15 kroners for each member of the family. Payment should be made to Dr. Jorgen Moller, 13, Vestre Boulevard, Copenhagen K.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, June 19th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) *Cases:* Dr. G. B. Dowling: (1) Dermatitis Vegetans? (2) Unusual Tuberculide. (3) Annular Sarcoid. Other cases will be shown.

FRIDAY.—8 P.M., EPIDEMIOLOGY. Annual General Meeting: Election of Officers and Council. *Paper:* Dr. J. Alison Glover: Some Observations on Nasopharyngeal Infections in Public Schools.

RESEARCH DEFENCE SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY, June 19th.—3 P.M., Sir Bernard Spilsbury: The Work and Responsibilities of a Pathologist (Stephen Paget Memorial Lecture).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 18th, to SATURDAY, June 23rd.—CHARING CROSS HOSPITAL, W.C. Clinical demonstration by Mr. E. D. D. Davis in the Ear, Nose and Throat Department on Fri., at 11 A.M.—ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E. Clinical demonstration by Mr. Dorrell on Fri., at 3 P.M.—SOUTH LONDON HOSPITAL FOR WOMEN, 88, Newington Causeway, S.E. Clinical demonstration by Mrs. Tindal-Robertson on Wed., at 10.30 A.M. Women only admitted to this demonstration. The above are free.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special course in Gynæcology; occupying some mornings and some afternoons.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Special course. Post-graduates can spend the entire day at the hospital.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. General Practitioner's course, 4.30 to 6 P.M., Medicine, Surgery, and Specialties. Further particulars from the Secretary (Mayfair 2236).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, June 18th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Eye and Medical (Children) Cases by Mr. N. B. B. Fleming and Dr. C. E. Sundell respectively.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, June 19th.—3.15 P.M., Mr. W. B. Gabriel: Foreign Bodies in the Gastro-Intestinal Tract.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, June 18th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Out-patient Clinic.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: The Diagnosis of Cerebral Tumours (1).

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey: Demonstration of Electrical Methods of Treating Paralysis (in Electrical Room).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Jacksonian Epilepsy.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, June 20th.—4 P.M., Dr. E. D. Macnamara: Functional Nervous Disorders.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn-road, W.C.

MONDAY, June 18th.—1.30 P.M., Mr. R. J. Cann: Hearing Tests.

WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Accessory Sinuses.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

TUESDAY, June 19th.—3.30 P.M. (at the Jessop Hospital), Prof. Phillips: Gynæcological Aspect of Contraception.

FRIDAY.—3.30 P.M. (at the Royal Hospital), Mr. Ferguson Wilson: Surgical Cases.

Appointments.

CUNNINGHAM, H. BOYD, M.B., B.S. Durh., has been appointed Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act to County Courts Circuits 1 and 2 (Northumberland and Durham).

MARTIN, MARGARET, M.B., Ch.B., M.R.C.P.E., Hon. Assistant Physician, Edinburgh Hospital for Women and Children.

POWELL, A. T. W., M.B., B.S. Lond., Medical Officer of Health, Scunthorpe, Lincs.

Certifying Surgeons under the Factory and Workshop Acts: PARRY, W. E., M.B., B.S. Lond. (City of London); ROSS, R. S., M.B., B.Ch. Belf. (Accrington); SINCLAIR, J. D. S., M.B., Ch.B. Glasg. (Cornwarth, Lanark); and BURNETT, J. F. M., M.B., Ch.B. Aberd. (Bradford-on-Avon).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital (for Genito-Urinary Diseases), Vauxhal Bridge-road, S.W.—Res. Sen. H.S. Also H.S. At rate of £200 and £100 respectively.

Barnsley, Beckett Hospital and Dispensary.—H.P. £140.

Barnstaple, North Devon Infirmary.—H.S. At rate of £150.

Birmingham General Hospital.—Asst. S. £50.

Birmingham University.—Asst. Lecturer in Physiology. Also Asst. Lecturer in Biochemistry. Each £300.

Bombay, Cama and Albless Hospitals.—M.O. Rs.800–50–1000.

Brighton, New Sussex Hospital.—Hon. Asst. Ophth. Surg. Also Hon. Clin. Assts.

Bristol, City and Council.—Consultant Aural S. £2 12*s.* 6*d.* per session.

Bristol Eye Hospital, Lower Maudlin-street.—Hon. Rhinologist.

Bury Infirmary.—Sen. H.S. At rate of £200. Also Third H.S. At rate of £150.

Chester Royal Infirmary.—Hon. Asst. P.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Radiologist. 150 guineas.
Colchester, Essex County Hospital.—Asst. H.S. and Reg. £120.
Croydon General Hospital.—Hon. Anæsthetist.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.
East London Hospital for Children, &c., Shadwell, E. 1.—Surg. to Nose, Throat, and Ear Dept.
Edgware, Redhill Hospital.—Radiologist.
Erith Urban District Council, &c.—M.O.H. £800.
Gloucester, Gloucestershire Royal Infirmary.—Res. Surg. O. At rate of £175.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. At rate of £100.
Hartlepool, Hartlepool Hospital.—H.S. £150–£200.
Hellingley, Sussex, East Sussex County Mental Hospital.—Jun. Asst. M.O. £350.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Hull, Royal Infirmary.—Asst. H.S. At rate of £150. Also Cas. H.S. £130.
Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s. Each at rate of £100.
Leeds, Jewish Herzl-Moser Hospital.—Res. M.O. £50.
London, Corporation of.—M.O.H. £1500.
London School of Hygiene and Tropical Medicine.—Research Studentship in Entomology. £250.
Manchester, Ancoats Hospital.—H.S. Orthopædic. At rate of £100.
Manchester City, Education Committee.—Asst. School M.O. £600.
Manchester, Salford Royal Hospital.—H.P. and H.S.'s. Each at rate of £125.
Margaret Hospital for Consumption, 26, Margaret-street, W.—Hon. Asst. P.
Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. to Ophthalmic Dept. Also Four Med. Regs. Each £250.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg. O. At rate of £100.
Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Sen. Res. O. £200.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Queensland Government, Department of Public Instructions.—M.O. £600–£800.
Reading, Royal Berkshire Hospital.—H.P., First and Third H.S.'s. Each £150.
Royal Army Medical Corps.—Commissions.
Royal London Ophthalmic Hospital, City road, E.C.—Sen. H.S. £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
Saint Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.
St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.
St. Paul's Hospital for Diseases of the Genito-Urinary Organs, &c., Endell-street, W.C.—H.S. At rate of £150.
South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £75.
Swansea County Borough.—Asst. Dental S. £450.
University of London.—External Examinerships.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.
Westminster Hospital, Broad Sanctuary, S.W.—Sen. Res. and Cas. O. At rate of £104.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Chagford (Devonshire) and at Oswestry (Shropshire).

Births, Marriages, and Deaths.

BIRTHS.

ALEXANDER.—On June 7th, at Harley-street, the wife of Dr. J. Browning Alexander, of a daughter.

MARRIAGES.

HAWKINS—BOWER.—On June 9th, at Holy Trinity Church, Brompton, S.W., Benjamin Edward Hawkins, M.R.C.S., L.R.C.P., to Edna Gertrude, only daughter of Mr. and Mrs. J. A. Bower, of Dulwich.

KEITH—NOTCUTT.—On June 7th, at St. Mary's Church, Woodbridge, William Brooks Keith, M.C., M.D., of Redwald House, Melton, Suffolk, to Marion Hetty, elder daughter of Mr. and Mrs. R. C. Notcutt, of Topfields, Woodbridge, Suffolk.

DEATHS.

ARMSTRONG.—On June 5th, at Alexandra-road, Bedford Park, W., Robert Stow Armstrong, M.R.C.S., L.S.A., aged 78.

ASHTON.—On June 9th, James Thornhill Ashton, M.B., C.M., for some years resident at Smedley's Hydropathic Establishment, Matlock.

FOSTER.—On June 8th, at the Radcliffe Infirmary, Oxford, of pneumonia, Edward Cecil Foster, M.R.C.S., L.R.C.P., in his 51st year.

WOOLLETT.—On June 7th, at Kingston House, Newmarket, Sidney Winslow Woollett, O.B.E., M.R.C.S., L.R.C.P. (late Major, R.A.M.C.), in his 72nd year.

N.B.*— *A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE RELIABILITY OF INFANTILE MEMORIES.

Being the Substance of an Address from the Chair at a Meeting of the Medical Section of the British Psychological Society.

BY J. A. HADFIELD, M.A. OXF., M.B. EDIN.,
CHAIRMAN OF THE BRITISH PSYCHOLOGICAL SOCIETY, MEDICAL SECTION; LECTURER IN PSYCHOLOGY, LONDON UNIVERSITY.

IT is generally accepted by modern psychopathologists that the psychoneuroses date back in their origin to early childhood experiences, forgotten and repressed, at least as regards their predisposing causes. If this is so, it is very important to discover how far those supposed memories correspond to actual experiences, and how far they are products of the imagination. The methods by which we arrive at those experiences are well known—namely, hypnosis or free association. They bring an enormous mass of infantile experience to the surface of consciousness, and this material has been systematised into the various theories of psychopathology. The main objections to the validity of these memories are: (1) That it is impossible for anyone to remember as far back in life as the first or second year. (2) That it is inconceivable that a child could have such thoughts and experiences as are ascribed to him.

It is suggested, therefore, that these visualisations are pure imagination, or have been suggested by the analyst. From one point of view, it does not matter very much whether these early experiences are true or not—provided that the patient gets better. But whilst from the therapeutic point of view it is unimportant, from the points of view of systematic psychopathology and of preventive mental hygiene their truth or falsity is of considerable importance.

There is no a priori reason why memories of infantile life should not be recollected. If we can remember what happened to us at the age of three or four, there is no reason why we should not be able to retain experiences that go back to the age of one or two. An infant of a few days old not only recognises the breast of its mother, which may be regarded as an archaic characteristic, but it may also recognise its bottle, showing that it is capable of retention and memory. These facts confute any argument based on the lack of myelination at this early age. If the baby of a few weeks and months old can remember and retain its experiences, is there any a priori reason why that memory should not be reproduced in later life?

Spontaneous Revival of Infantile Memories.

A medical colleague vividly recalls a fire which occurred when he was eight months old. He says: "In the course of a conversation with my parents, when I was about six or seven years of age, I was told that the house in which I was born had caught fire and had been completely destroyed when I was eight months old. Immediately this was mentioned, I said, 'Oh, yes! I remember.' This was ridiculed by my parents, who informed me that, as I was only eight months old at the time, this memory was quite impossible. However, I said, 'But I do remember, and I can tell you something more about it!' I then proceeded to describe a circular staircase coming round a circular wall, and at the top of this staircase was a landing lit by a window. The window had frosted glass in the centre with coloured panels at the sides. I described the whole place lit up—flames licking the glass panels, which were cracking with a noise like the reports of a pistol. My parents said, 'Yes, that is perfectly true,' but added that I must have imagined it. Since that time I have never seen any photographs of the house, which was completely destroyed. These details were corroborated by both my parents, who said that the fire had reached considerable proportions by the time we had reached this landing, and that within five minutes the whole staircase and floors of the house had collapsed."

We cannot, of course, absolutely exclude the possibility of leakage of information in the interim; but not only did the patient have no recollection of this, but in any case the account would not have included such unimportant details as the frosted glass and coloured panels. Moreover, we should expect, on physiological grounds, that an experience so emotional would produce a lasting impression upon the child's brain.

Memories Recovered by Free Association.

We may group the memories obtained by free association in analysis into three classes: (*a*) Those for which we can

obtain objective evidence. (*b*) Those for which there is no objective evidence, but which are corroborated by similar conditions observable in childhood. (*c*) Those which persistently emerge in analysis and yet can neither be objectively proved nor corroborated.

A man of about 23 was sent to the writer as a case of "bronchial asthma," with a spasmodic cough, choking and feeling of suffocation. In free association—in this case under hypnosis—he recovered an experience as a small child in which he was ill in bed and his mother put something under his face, the fumes of which nearly suffocated him. In reviving this experience he had an attack of suffocation. He had remembered nothing of this incident, nor indeed did he remember it as having actually occurred even when he had experienced it in analysis. I asked him to write to his mother and ask simply whether anything had occurred in childhood in which he had been nearly suffocated. She replied that when he had had whooping-cough she had, as a domestic remedy, put some Friar's balsam on a hot shovel to make him inhale it. But the shovel had been too hot and she thought she would have lost him with the attack of coughing and suffocation which it produced. She added that the green bottle she had used still stood on her kitchen shelf. She said that he must have been under 2½ at the time, because they had left the house in which the incident occurred when he was that age.

The points to note in this case are that we have objective verification of the truth of the experience; and that, curiously enough, although the patient reproduced this true experience, he had no knowledge nor recollection of its truth even after he had recalled it. Two further proofs of the truth of the story are that in recalling it he felt the whole experience vividly, and that the reproduction of the experience cured him of his asthma.

It stands to reason that only a very small proportion of the "memories" revived from childhood can be objectively verified because of the absence of parents and others who could verify them; because most of the experiences are subjective and therefore cannot be confirmed; and because the most important of these experiences are not only subjective but repressed.

Memories which are Probable but not Verifiable.

The second group are those which we have no means of verifying objectively, but which, nevertheless, may be corroborated by similar experiences commonly observed in child life. This is perhaps the most important and reliable method of determining the truth of our theories as to the origin of the psychoneuroses. All the symptoms of psychoneuroses—hysteria, anxiety states, obsessional fears and neurasthenia, as well as the perversions—may be observed in the normal child. The theories of Freud, of Jung, and of Adler all emphasise the importance of infantile experiences in the production of later abnormalities. It is natural, therefore, that we should look to early childhood itself to determine, first, whether these feelings and thoughts exist in children; and, secondly, whether they are found actually to give rise to the psychoneuroses. A patient says: "I feel myself at the breast sucking comfortably and warm. Then some thing seems to happen, something terrible, like an impending disaster." (Pause.) Pressed to continue, he says: "Well, something ridiculous comes to my mind. I get a taste of blood in my mouth, and then the thought of myself biting my mother—but that can't be true, a baby of that age has no teeth to bite with."

A picture of that kind gives very strong evidence of truth. We may, or may not, get objective evidence for it, but in spite of the patient's disclaimer, we know that such things do frequently happen in infancy, and indeed may necessitate weaning. The very scepticism of the patient as to the possibility of the memory, which is not merely unexpected and actually discredited, but also repugnant to him, adds credence to it.

In hypnosis and in free association there sometimes emerge images representing the emotional experiences of birth. Darwin long since pointed out that the newly born animal expresses all the emotions of fear. Such experiences, as we should expect, seem to leave a lasting impression on the brain, and under special conditions, such as hypnosis, can be reproduced. A patient in a hypnoidal condition suddenly goes off into a state of anxious dread and then begins to experience and describe her feelings just after birth when, as a matter of fact, she was left as dead. She proceeds: . . . "Then all of a sudden somebody snatches me up—falls down on me and takes me up. It is a horrid moment—it came so suddenly. Then it shakes me and I get so frightened and I try to get away from it and try to resist it and I am so terrified! They are *slapping* me. It isn't the pain of it, but the harshness of it—their cruelty. Then I begin breathing and it makes me terrified. I don't think I wanted it. Instead of that greyness, it is all red now, and there is a *terrific* noise everywhere—noise like many waters rushing—terrific noise—no rest, no peace, and they still go on shaking me. Somebody is holding me with a very hard hand, like claws—one on each side of it—so still and cold and cruel and merciless. Then I try to get out of it, *but they are holding me in mid-air—upside down.* But that can't be true; they don't hold babies upside down!"

After the analysis of this experience, I said to her: "Do you not know how they revive infants when they are not breathing after birth?" She said: "I have no idea." I said: "They sometimes take them by the feet upside down and smack them." She said: "Surely that is very cruel!" I replied: "But they think it does not matter because the child has no cutaneous sensations." She said: "But that is just what I experienced; there was no pain at all; but there was terrible shock which made me feel dreadful terror."

It is interesting to note that some obstetricians used to teach students never to slap the new-born child because of the additional shock this inflicts.

Memories Without Reasonable Corroboration.

The third group of memory images are those which can neither be objectively verified nor corroborated by a direct observation of child life, and yet should claim our attention on other grounds, especially their frequency and persistency.

A patient felt very sick when she arrived in the consulting-room—a sickness which had come on after the previous analysis. Told to associate on this feeling, she said: "It's something to do with breasts. Something made me feel that mother's breasts were repulsive. I've got an idea of it now—oh! I hate telling you! Something about this enema business. When I was lying waiting to have it done—I was on the bed—mother must have gone out for something and left me lying there. I'm wondering whether father came—or he was there. Oh! I don't know how I can bring myself to say it—and while I was amusing myself playing with my body—father came up and looked at me in a smirky kind of way. Then he felt me all over, too. He gave me a good deal of pleasure. . . . Something happened one night when she was feeding me. (Feel that.) Father came in and he was in a nasty temper. She said: 'You're drunk'—something in the word 'drunk' used to make me shudder. I used to have nightmares of drunken men coming down on the house. He probably seized her breast and tried to stuff it up against my face. (Movements of repulsion, turning over in distress.) And he said: 'Feed your brat.' Then he called her nasty sort of names—'old cow' and 'bitch,' and mother was terrified and was crying. When he went away she tried to make me finish—to keep on—and that is what made me feel sick. She is trying to put the breast to my mouth. I'm frightened and disgusted and I'm sick—I vomit. Then mother gets fussed because I'm sick over everything." (Patient now much more relieved in tone of voice.)

From the scientific point of view, these pictures are, of course, not on such secure ground as those which can be confirmed, or corroborated by our knowledge of child life, and should be accepted with greater reserve. The main possibilities of such a "memory" are: (1) that it is entirely and literally true, an exact reproduction of the thoughts and experiences of the time; (2) that the whole thing is pure imagination; (3) that it is a real earlier experience, read and interpreted in the light of later experience.

(1) Many of the visualisations in free association admittedly have no objective relation to fact, and no analyst claims that all these pictures are literally true. That should be sufficiently obvious to those who remember that Freud himself discovered long ago that the supposed sexual traumata were not always objectively true, but often turned out to be sexual phantasies.

Sometimes the pictures are symbolic, as when a girl sees herself at the age of 3 in a field of corn and all the heads of corn burst into flame. Again, there are corrections, as when a patient sees herself as a child petting and comforting a doll, and afterwards realises that it was not a doll, but herself, she was comforting. Again, there may be pictures which on the face of them are contradictions—as when a patient sees himself as a child of 2 in a garden where he did not live till he was 5. In such cases, however, it nearly always turns out that the picture is a composite one, combining two experiences of similar emotional tone. Obviously, then, all the pictures in analysis cannot be accepted as literally true.

(2) Nor, on the other hand, can we accept the easy explanation that they are all false.

The first evidence is that of subjective conviction. There is a warmth and intimacy about such experiences which is not present in others. Patients "remember" then as we remember the events of yesterday, and analytic memories should carry at least the same weight of conviction as those of ordinary life.

Another striking feature of the recovery of early memories is the extraordinary emotional tone in which they are revived. The feeling of intense cold, of horror, of anger

is impossible to convey in print, but commands conviction. A case in point is that of a man suffering from a sexual fetichism. In analysis he was carried back to the sensuousness of infantile life. In recovering this experience he became so dissociated that he started to go through all the movements of sucking and continued for two or three minutes. Then he had a short rest and started again and went on till he had had his ten minutes' feed. He then fell back, as it were, with the bloated appearance of the gratified infant. This experience happened on two or three occasions, and after each he would emerge again into ordinary conscious life with a look of surprise. In this mental phase he had completely returned to the feelings and actions of infantile life. The fetichism was directly connected with this experience, and was a symbolic representation of it.

Production and Cure of Symptoms.

During the course of analysis, new symptoms arise. The patient comes feeling quite gay and cheerful, but in the restoration of some buried experience he begins to get depressed, to feel hatred, acute nausea, headache, or any other physical symptom for which he is being treated. One patient, recovering a memory of fear, gets an intense ache in her jaw and neck; another feels so sick he needs a receptacle. Another patient finds herself compelled to make kissing movements the whole evening after treatment. Nor is this a matter of chance, for each time we recover that incident we elicit the same response. Like the dentist probing a tooth, we touch one spot or complex which brings the symptom to the surface. The law of cause and effect compels us to connect the original incident and the present symptom.

The elucidation and liberation of these early incidents brings about cure—a "cure," of course, being for our purpose merely one form of reaction.

A patient was suffering from severe abdominal pains and tremendous distension, so acute that if she ate any food after dinner she was unable to sleep at all owing to the distension. She had, of course, had her appendix removed, but without effect. Ultimately she came in analysis to an experience of infantile life when her mother, usually very tender and gentle with her, appeared to be bathing her very roughly, which made her annoyed and angry. Her mother then gave her her food out of a bottle in a rough way so that the child was unable to digest the food and suffered from very severe wind. It was the acute pain and distension of this that in after years reappeared as her hysterical symptom. When the patient realised that this roughness on her mother's part was not due to any lack of affection, but probably to the fact that the father had recently become a drunkard and the mother was probably impatient to go out and bring him back from the public-house, the symptoms entirely disappeared and have now been absent for some years.

The cure of the symptom cannot be the result of mere suggestion, for in many cases actual suggestion had been tried in vain, and many other similar experiences were revived without effect before we came to the particular one, which, when liberated, left the patient cured for good.

(3) The third possibility is that these pictures are a mixture of real infantile experiences with later interpretations, which may be true or false. A difficulty in the acceptance of such infantile memories is that both in form and substance they seem to be alien to what we already know of child life. They are expressed in language so sophisticated and consist of thoughts so complex and elaborate that it is difficult to believe that they can be reproductions of childhood experiences. In a case mentioned, the patient, remembering what happened in her first year, says, for instance: "While I was amusing myself playing alone with my body, father came up and looked at me in a smirky sort of way." How can an infant understand what a "smirk" is? How, in the birth phantasy, could an infant know that it was upside down? How could it know what strangulation meant? It is quite true that a baby cannot know these things, but it can feel them, and these experiences may leave a deep impression on the mind. A baby, it is true, cannot know that it is upside down, because for a baby there is no "up" and no "down"—in which it proves itself a better philosopher than we—but a child can feel that it is upside down, and soon lets you know it. A child may not know what bitterness is, but it can taste bitterness. A child cannot know that it was strangulated, but it can feel strangulation, and the reproduction of this feeling was actually experienced.

A large part of our difficulty disappears if we keep in mind these facts: (1) That a child's mental experiences consist almost entirely of undifferentiated feelings which only later become differentiated into thoughts. (2) That it is possible to reproduce feelings as well as thoughts. (3) That if these feelings are to be expressed at all in later life, they must be expressed in language which is necessarily sophisticated and mingled with a certain amount of interpretation, true or false.

The Nature of a Child's Experience.

The mind of a child probably consists of vague and undifferentiated feelings—longing for food, craving for gratification, feelings towards its mother. It is only later that these become differentiated out into thoughts Thoughts, as Conrad says, are the shape that feelings take, and the child has feeling experiences even when it cannot shape these feelings into thoughts. These feelings are very complex and complete, and contain all the embryonic material which will later find shape. The simple infantile experience of crying when thwarted in its desire to be at the breast is simple and undifferentiated; it is just one experience. We may, nevertheless, find in it elements of several forms of mental experience. There is anger; there is misery; there is sensuous desire; there is hope; there is despair; there is effort; there is abandonment and futility. The experience itself is simple and undifferentiated, but as he recalls this experience and revives the feeling in later life, the patient may analyse it and find in it all these elements. I would venture to say that there is no feeling or emotion of the adult which the infant is not capable of experiencing. The difference between the infant's mind and that of the adult is that in the former these feelings are vague, crude, and undifferentiated, whereas in the adult they are differentiated and formed into definite cognitions. A child can experience where it cannot understand; it can feel where it cannot discriminate; it lives by its feelings, not by its thoughts. In this way, a child appears to be extremely sensitive to the moods and feelings of those around it. The child can easily feel the anger of its father without being able to think, "there's father upset again!" It can feel jealousy towards another child without being able to discern that "the other child is standing in my way." A child can cling to its mother for protection without being able to realise "if I get separated from her it's all up with me!" The infant is terrified by noise without being able to recognise that noise spells danger. An infant may hear the sound of a word, such as "drunk" (in our illustration), and retain it, with considerable emotional tone, without the word being really understood, and yet the reproduction of the word would reproduce the unpleasant feelings associated with it. The failure to appreciate the way in which a child feels experiences, even when it cannot understand them, has led to pitiable blunders on the part of parents, who permit their children to witness sights and undergo experiences on the ground that they are "too young to understand." Undoubtedly, they are "too young to understand" the whole significance of such acts, but they are not too young to feel, and experiences that are not in the least understood by a child may produce violent commotion in its soul. Indeed, it is very often these experiences which, for the very reason that they are not understood but strongly felt, produce such a profound effect upon the mind. If we remember this we can realise how it is possible for these experiences which come up in analysis to be real experiences of early childhood, even though the thoughts into which they are differentiated, and the language in which they are expressed, belong of necessity to a later age. This view is supported by anatomical observations. In the year-old child the thalamus, the centre of affect and emotion, is active, whereas the cortex, the centre for more discriminative thought, is probably not in full function.

Translation of Feelings into Language.

Memory is conscious reproduction, and it is just as possible to reproduce a feeling in consciousness as it is to revive a thought. A patient can revive a feeling of depression and give vent to a fit of sobbing without reference to any present cause of cognitive content. This is precisely the way in which pictures often come in analysis; first the feeling and then the cognitive content. The infant, of course, cannot express his feelings in any other way than by emotional expression. The adult, on the other hand, recovering these same feelings in analysis may at first be incapable, like the child, of doing anything but feeling them, but later he becomes capable of putting the feelings into words. The result may be a perfectly true interpretation of his infantile experience, though the language and thought is far too sophisticated for a child to enunciate or even to think. The argument, therefore, that these memory pictures of childhood are not true because they are much too sophisticated is not conducive, for the child undoubtedly has feelings and, if feelings are to be expressed at all, it must be by words. In that transformation of the early experiences into adult thought and language there is, of course, always an element of interpretation, analagous to the secondary elaboration which takes place in dreams. We are faced with three possibilities: (1) A simple and accurate translation of these feelings into language. (2) Interpretation in the light of later experience, and the interpretation, nevertheless, may be a correct explanation of the feeling. (3) Incorrect interpretation too much influenced by later experience.

When the child feels a sense of awful dread in infancy and the adult expresses this in analysis, he is merely translating real feelings into words. In the incest phantasy, we may assume that the child is not conscious of any knowledge of sexual intercourse any more than it is aware of the idea of hunger or of death. This may, nevertheless, be what it feels and desires—an archaic feeling handed down with its physiological inheritance—if it could put its wishes into words. That is one view of the case.

In the second place, it may be that the child has certain feelings which we know and understand to be inherently sexual, and we may be right in so interpreting them. The girl, in later adolescence, may have cravings and desires of which she does not understand the nature, but which are quite clearly sexual and which she later recognises as such. We should be quite correct in so interpreting them. So the child may have precisely such feelings and cravings, and we may be quite right in interpreting his cravings as sexual. These feelings would not be understood at the time, but the adult patient, recovering the experiences, would understand and interpret them in the light of later experience.

On the other hand, it may be that the sensuous experiences are true, but the interpretation is false. It may be that the child has certain experiences of a sensuous kind which may be really egoistic, but, because they are so similar in feeling to later sexual feelings, they are wrongly interpreted as sexual.

This question of the interpretation of early experiences is a very important one, because upon it depend the various schools of psychopathology. There is a certain agreement as to the facts, as there must be to those who get free association in childhood, but the schools differ on how those facts are to be interpreted. I have little hesitation in saying that the greatest pitfall into which the analyst is likely to fall is the so-called "psychologist's fallacy"—namely, reading into a discovered experience his own thoughts and interpretations. The risk comes from the patient and from the analyst. The analyst may read into the patient's experiences his own interpretations and theories, but the patient himself may commit the psychologist's fallacy in ascribing to his own early experiences the interpretation of a later day.

Conclusions.

The foregoing considerations encourage us in the belief: (*a*) That it is possible to recover in memory experiences of infantile life—nor is there any reason why we should not. (*b*) That confirmation of these experiences can be found not only in objective verification, but in corroboration, and by the effects of the revival of these experiences. (*c*) That many of these early experiences, whilst themselves true, may become distorted by interpretations of a later time.

It is therefore only as we investigate, by direct observation and much more thoroughly than we have yet done, the actual behaviour of infants and children, that we shall be able to divest these memories of their accidental accretions and unfold the mind of a child as it really exists, a need of fundamental importance, whether from the point of view of psychopathology or of preventive mental hygiene.

"PORTIA" NON-FLAM. EYE SHADES.

WE have received from Messrs. Solport Brothers, Ltd., 184-190, Goswell-road, E.C. 1, specimens of their "Portia" Non-Flam. Eye Shades. These are made in three shapes—namely, for right eye, left eye, or either eye—from semi-opaque material, pink lined green, and also from green transparent material. The severe tests to which we have put the shades show that it is not strictly accurate to suggest that they are non-inflammable, but it is only under conditions not likely to occur normally that the material can be made to burn. The shades are certainly an improvement on those made from celluloid, both in utility and appearance.

DALRYMPLE HOUSE.

THE Forty-fourth Annual Report of Dalrymple House for Inebriates at Rickmansworth shows that Dr. F. S. D. Hogg's successful work is being maintained. Sixty-four patients were admitted during 1927, eleven of them under the Inebriates Act. All were alcoholics except for one morphine and two heroin addicts. Nearly all, including three sufferers from delirium tremens, made good recoveries. The average period of residence was seven to eight weeks for private patients and 23 to 24 weeks for those under the Act. The percentage of good results steadily increases in a ratio corresponding with the length of stay; this is, of course, partly due to the early discharge of patients unsuitable for treatment, but those who stay longest are often borderline, mentally deficient, and chronic cases for whom little can be hoped. Dr. Hogg points out that time is an essential factor in the treatment of any addiction and is closely associated with those elements of habit, self-suggestion, and self-education that play such an important part in the cure. The length of time that will strike the happy medium between staleness and discharge whilst still unstable must be a matter for careful individual consideration in every case. In an interesting statistical appendix Dr. Hogg gives particulars of discharged patients, relating to their age, previous residence, occupation, temperament, habits, and history. The report is illustrated with a number of photographs of the beautiful grounds.

THE SURGERY OF YESTERDAY AND TO-MORROW.

To the Editor of THE LANCET.

SIR,—As reported in THE LANCET of June 9th, p. 1207, the address of the President of the Royal College of Surgeons of England delivered at Addenbrooke's Hospital, Cambridge, savours somewhat of the utterance of the Pharisee who was not as other men. If the conditions prevailing in a Leeds operating theatre, 40 years ago, as described, were typical of English surgery generally they were bad. If not typical then Leeds must have been a curious centre.

My memory recalls the state of affairs in the Glasgow Western Infirmary, 50 years ago, soon after Lister left Glasgow, and while his teaching, and carbolic spray, were in the ascendant. Scrupulous cleanliness was then the order of the day, both with surgeons and dressers, supplemented, but not replaced, by the all-penetrating spray. Coats or jackets, which may, or may not, have been stained were substituted for out-of-door "frocks," but they never appeared like the disreputable old coats gloated over by Leeds surgeons. There was almost an odour of sanctity in the theatre when the operating surgeon entered, looking like a bishop, with his working jacket protected by a white apron, and the jacket sleeves hidden by freshly laundered white sleeves, which closely gripped the arm just above the wrist and extended well over the elbow. This surgical equipment probably foreshadowed the later development of sterile overcoats, and may have been the outcome of Lister's influence. At any rate, Glasgow must have been years ahead of Leeds in the matter of its ablutionary technique. Bacteriology was then unknown, but *vis medicatrix naturæ*—the patient's power of resistance—was ever kept in view, and wisely so. I am, Sir, yours faithfully,

Scarborough, June 10th, 1928. JOHN IRVING.

To the Editor of THE LANCET.

SIR,—The following quotations may interest some of your readers:—

1. Erichsen, Science and Art of Surgery, tenth edition, 1895 (seven years after the introduction of Lister's antiseptic surgery), p. 2. "When we reflect . . . we can scarcely doubt that the limits of surgery have been nearly reached. . . . The surgeon of the future can scarcely hope to invent new operations; he must be content to modify and perfect those that have been devised by the genius and skill of his predecessors. . . . But if the mechanical art of surgery has attained to so high a degree of perfection that we can scarcely hope for much further progress in that direction, the case is widely different with the science."

2. Sir Berkeley Moynihan, at Cambridge, June 1st, 1928 (as reported in THE LANCET, June 9th): "The craft of surgery has to-day reached something near its goal. If operations have to be practised in the future, it is not possible to imagine any considerable improvement upon the methods and results of to-day, as exemplified in the hands of the great masters. . . . The art of surgery has outrun its science."

I am, Sir, yours faithfully,

London, W., June 11th. A. S. BLUNDELL BANKART.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A public meeting of the Council will be held on Thursday, June 21st, at 5 P.M., in the Council Chamber, Birmingham. Addresses will be given by Sir Maurice Craig and Dr. Crichton Miller on the Prevention of Nervous Breakdown.

BRITISH HOSPITALS' ASSOCIATION.—The eighteenth annual meeting and conference of the Association will be held at Southport on Thursday and Friday, June 21st and 22nd, under the presidency of Sir Arthur Stanley. On Thursday morning Sir Thomas Horder will read a paper on the Place of the Voluntary Hospitals in Relation to Health Services, and in the afternoon Mr. G. Q. Roberts, secretary and receiver of St. Thomas's Hospital, will speak on Problems of the Voluntary Hospital of to-day compared with Problems of the Past. A discussion on the Place of the Nurse in the Hospital will be opened on Friday morning by Miss M. E. Sparshott, and in the afternoon visits will be paid to hospitals and other institutions. The conference secretary is Mr. J. H. Shaw, Southport General Infirmary, Pilkington-rd., Southport.